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# THE IRON AGE

A Review of the Hardware, Iron, Machine[ry] [and] Metal Trades.

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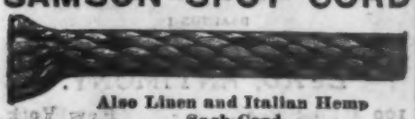

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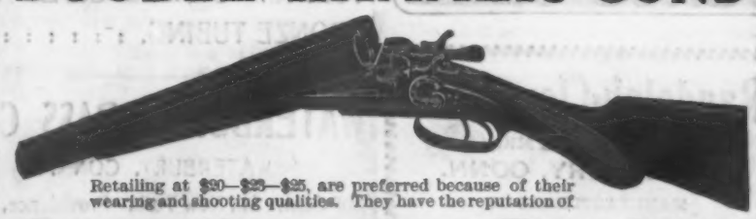

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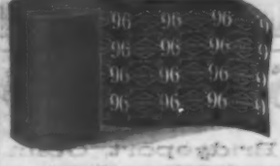

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**The Locomotive of To-Day.** Reprinted with revisions and additions from the "Locomotive Magazine." Second edition. 8vo. Cloth. 200 pages, 37 illustrations. 16 half-tone plates. London, 1903.....$1.00
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# THE IRON AGE

THURSDAY, MAY 12, 1904.

## The Locke Steel Belt Machine.

### A Machine for Automatically Manufacturing Steel Sprocket Chains.

The machine shown in Fig. 1, known as the Locke steel belt machine, manufactures steel sprocket chains from rough stock in the form of steel ribbon. As the illustration shows, the strip is taken in at one side and issues as a finished chain from the opposite side, where it is wound on an automatic reel. The process is not new, but there have recently been added a number of interesting and important improvements in the way of new mechanical devices, some of which suggest adaptations for other purposes. The reel is one of these new devices, and another departure is the use of built up dies and scoring chisels. Still another of the new devices, which will be described later, is the finger feed working against a spring depressed friction plate. This was adopted after repeated failures in an endeavor to make a roll feed answer the purpose. These improvements have resulted from years of commercial operation of the machine in the works of the Locke Steel Belt Company, Bridgeport, Conn., and more recently at the factory of the Locke Steel Chain Company, Limited, South Tottenham, England. As will be gathered from the following description, the changes have materially increased the efficiency of the machine.

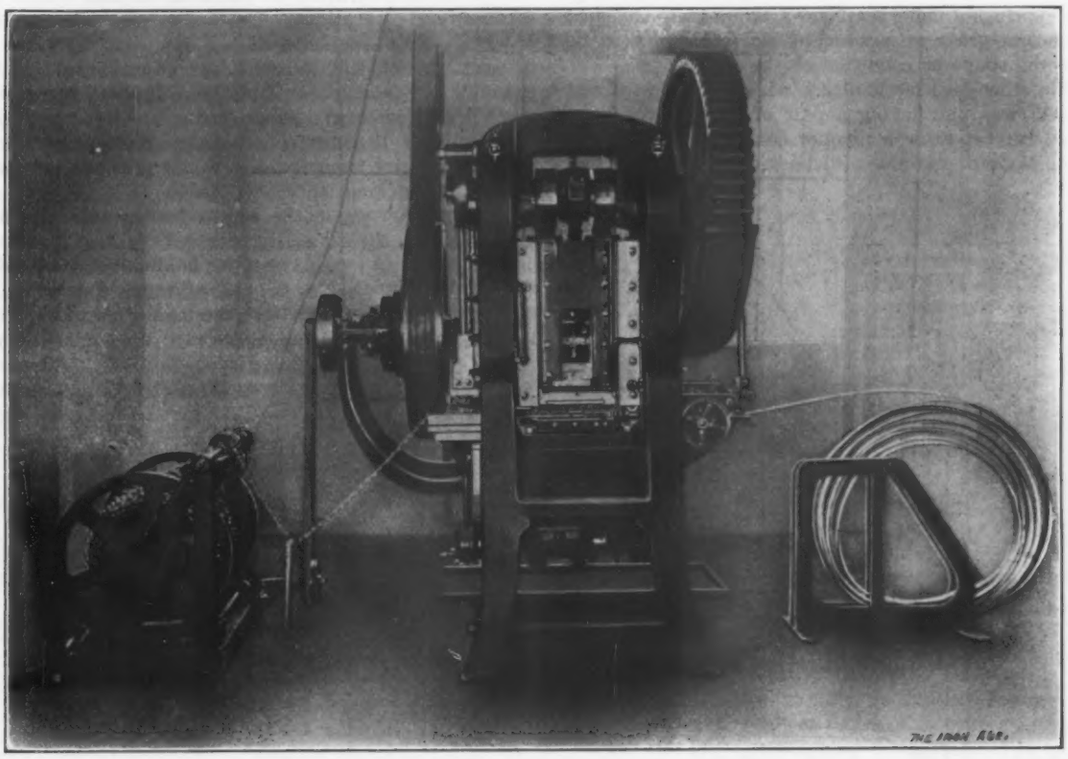


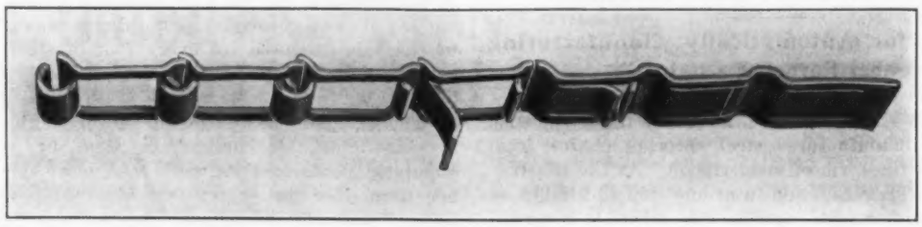
Fig. 1.—The Locke Steel Belt Machine as It Looks in Action.

The chain is shown in its various stages of formation in Fig. 2. It is similar in form to the extensively used cast malleable iron detachable link belting, and is made in the same standard sizes, but the links are of steel instead of iron. The steel enters the machine in strips corresponding in width and thickness to the size of chain desired and leaves it formed into links continuously joined together. As will be seen in Fig. 2, the end bars of the links are formed from the material in the center of the blank, a part of it being bent forward and a part backward. As a consequence, nothing is wasted and a foot of chain is produced for every foot of steel used. This saving of material is an advantage in the economy of both strength and cost.

The original machine, while it solved the problem of making detachable chain from steel by a process of stamping, performed its work in a more laborious manner than does the present machine, as it made use of several separate operations. In the new machine successive steps are performed on several links at each stroke of the dies, so that for each cycle a complete link is delivered. The work is performed at the rate of from 15,000 to 25,000 links per 10-hour day, and even up to a rate of 60 a minute in the smaller sizes. These are all made to a standard gauge, consequently the greatest accuracy of feed adjustment is necessary. Though the operator is required to test the chain with a standard gauge bar, no hand work is necessary throughout its manufacture. The chain is transported about the factory on the reels until it reaches the shipping department, where it is removed from the reels by hand, and is drawn over a testing bench for a final inspection of its accuracy, pitch and strength.

As has been intimated, one of the most serious difficulties to overcome was to construct a feed which would positively deliver to the dies the different sizes of steel bands which a single machine is capable of handling. This means that the feed must draw into the machine for the manufacture of the heavier sizes strips of metal up to ¼ x 3 inches in cross section, and that it must draw it from a closely wound coil and accurately present the partially formed links to the successive operating members. Both finger and roll feeds were originally tried, and it was only after years of experiment that a satisfactory feed was found and adopted. This is shown

in Fig. 3. It is a simple feed, yet a positive one, as shown on one occasion when the steel strip became caught at the back of the feed and was severed without damaging the feeding mechanism. An original fault of the finger feed was a tendency to slip at the first forward movement, resulting in inaccuracy. This was prevented by adding the spring depressed friction plate *a*, Fig. 3, underneath the feeding slide *b*. As this friction plate is



Fog. 2.—The Locke Chain, Showing the Several Steps in Its Formation.

under considerable pressure, the slide cannot move forward until the jaws *c* have firmly grasped the strip. With the springs *d* underneath the friction plate adjusted to a sufficient pressure, practically no attention need be given to the shape or condition of the feeding jaws.

Among other feed mechanisms which were tested and abandoned was one having a pair of rolls driven by a pawl and ratchet after a manner common to roll feeds. To accommodate variable thicknesses of steel it was

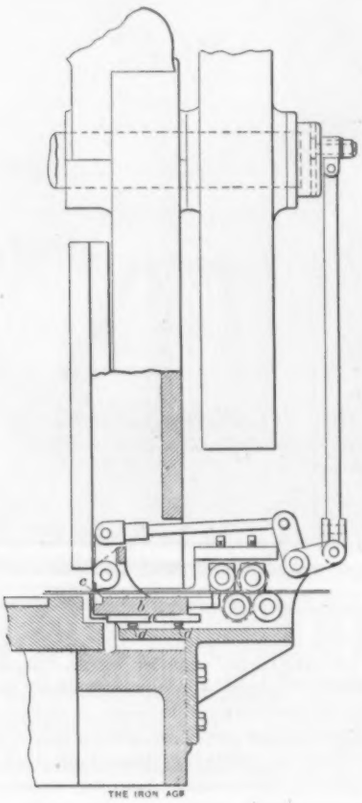



Fig. 3.—Detail of the Feeding Mechanism.

necessary to have the adjustable rollers spring depressed, and to insure a positive feed this spring was necessarily very heavy, even where two sets of interchangeable rolls of different sizes were used for large and small chains. In all feeds, to insure absolute accuracy, the strip is fed a little beyond the point where it is to receive the die; then, as the dies come together, owing to their conformation, the strip is drawn back to the proper position. This requires releasing the feed at this particular moment, and with the spring pressure feed complications ensued. It was also necessary to provide a release to facilitate the entrance of a coil. A slight adjustment of the roll feed can only be accomplished by changing the diameter of the rolls on account of the constant pitch of the ratchet, while the finger feed, on the other hand, can be adjusted to feed any length between nothing and its maximum. All of these objections led to the rejection of the roll feed in favor of the finger feed.

An important feature, as before stated, is the use of built up dies, as shown in Figs. 4, 5, 6 and 7. Manufacturers of sheet metal goods appreciate the expense involved in the operation of combination dies which perform several operations. The Locke dies, making from 15,000 to 25,000 completed links a day, each involving five distinct, though simultaneous, operations, would require a prohibitive amount of labor and expense for repairs, were it not for their method of construction. In fact, it was formerly the opinion of chain experts that the expense of repairs from the dies would preclude the manufacture of machine made steel chain.

The tools shown in the figures just mentioned consist of a main die, Fig. 4; a cam operated die, Fig. 5, working against the main die and used for holding the blank while the forming punch, Fig. 6, passes through apertures in it and shapes the metal against the main die, and a finishing die, Fig. 7, which passes through the main die from

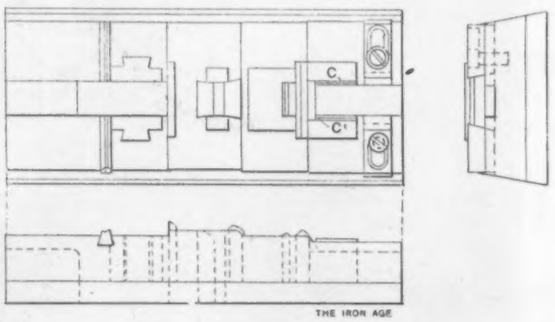



Fig. 4.—The Main Die.

underneath, rolling up the hook of the link against the blank holder. It will be seen that all wearing points and edges of these tools consist of small, rectangular and easily fitted pieces. Being made separate, each piece may be given the temper suited to its particular part of the work. The pieces are also arranged so that each piece is backed up by hardened plates, so that by inserting under it a liner or piece of packing it can easily be raised and reground as it becomes worn.

The most important peculiarity of these dies is the manner in which they score the metal prior to the actual cutting, thus bringing the burden of the work upon cheap and easily replaced tools, and leaving the finishing processes to other members of the dies. These scoring chisels on the main die and punch perform the work heretofore accomplished by various shearing edges. From the construction of the link, as shown in Fig. 2, it may be seen that the interior of the blank is scored transversely near one end and longitudinally by the chisels C and $C^1$, Fig. 4, and $C^2$ and $C^3$ in Fig. 6, so that in the second and third succeeding operations the die and punch have merely to tear the metal from the interior and to roll it up in the end bars without using any shearing action. This method obviates the necessity of keeping several shearing edges in order and also makes it less essential to preserve ab-

solute alignment of the several operations. Moreover, the edges of the die in the second and third operations need not be so near the path of the punch as to produce a shearing action, as the metal will be torn along the lines of the scoring, even with the edge of the die some distance away from the path of the punch. This allows the edge of the punch and the edges of the die to be rounded or blunt and still do perfect work without frequent resharpening. The scheme has the further advantage of preventing the liability of cramping the tongue

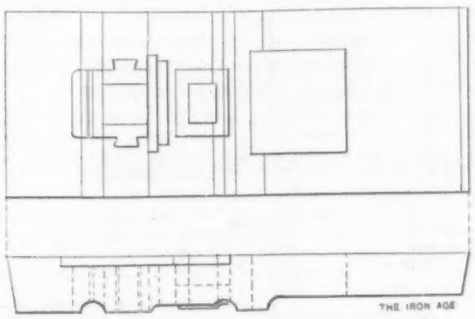



Fig. 5.—The Cam Operated Die that Holds the Blank.

of the link between the walls of the die, the clearance being sufficient to permit the tongue to pass freely through the die as it is depressed by the punch. It also permits the chain to be fed along freely. The scoring produces smooth, round inner edges on the side of the link without the presence of a burr or fin; hence, a later operation of tumbling is dispensed with.

A similar arrangement is employed to relieve the work of the final cut-off die. The strip is marked by the cross scoring chisel $C^4$, Fig. 6, where the blank is to be finally severed; consequently the work required of the final cut-off knife is so small that it seldom needs resharpening. By thus concentrating in a few small cheap chisels the work usually performed by costly shearing edges a great amount of time and expense is saved, a

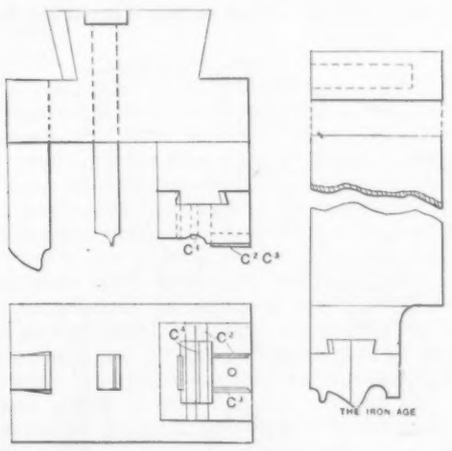



Fig. 6.—The Forming Punch. Fig. 7.—The Finishing Die.

fact to which the machine owes no small part of its commercial value.

The mechanism shown in Fig. 8 is that which operates the die from underneath and is a departure from the usual method of obtaining this motion on a triple action press in that it is a complete toggle operated press securely bolted to the main machine. The slide B receives its motion from the shaft A through the toggles D and E. All of these moving parts are mounted on one frame, making the mechanism for obtaining this third motion complete and self contained.

To compensate for wear in the last or finishing sections of the dies shown in Fig. 7, which roll up the hooks and complete the links, a pair of dies, A and $A^1$, Fig. 9, operated by the auxiliary slide B on the side of the machine, have been added. Each link as it arrives between these dies is given a final squeeze, which insures a uniformity of shape and size. As there is no rubbing motion in the action of these auxiliary dies, the only wear being that incident to the light pressure of the tools on the link, the wear is so slow that the dies seldom need replacing. It is interesting to note that in one section of the die case hardened machine steel has been found to many times outwear tool steel.

One difficulty in securing the most economical handling of the finished chain was to design a reel to take the chain as it comes from the machine and wind it automatically and evenly on the spool. It is necessary that this reel should act intermittently in order to accommodate the varying speed of rotation as the diameter of the winding increases. This difficulty was aggravated by the increasing weight of the reel, the weight empty being about 100 pounds and fully wound 500 pounds. When the reel is used at the furnaces in the final tempering of the chain the speed of the chain must be uniform both in delivering the chain and in receiving it on the

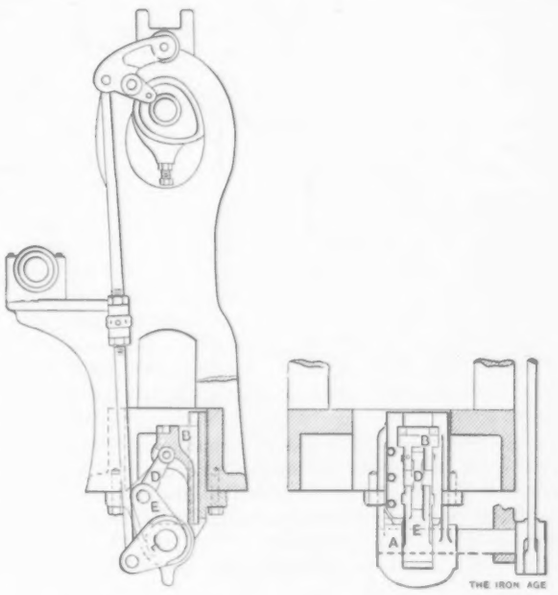



Fig. 8.—The Mechanism Operating the Lower Die.

reel at the other end after it has passed through the furnace.

The problem of procuring the intermittent motion of the machine where the chain is delivered to the dies a link at a time was not an easy one. Many spring clutches were tried without success, because of the great difference between the power required to overcome the inertia in the starting and stopping when the reel is empty and that required when it is full. In starting the empty reel the adjustments had to be fairly tight, so that the clutch would be strong enough to start the reel from a position of rest and yet not so stiff as to pull the chain from the machine or lift the reel from the stand when the last completed link had been taken up and the reel was waiting for the next link to be formed. As the reel grew in weight these adjustments became delicate, requiring such a tightly adjustable clutch as to be impracticable while winding the first few courses of chain. So annoying were the original devices that workmen preferred to turn the heavy reels by hand. And further, the chain was never smoothly wound, often becoming so tangled as to cause trouble in removing it from the reel.

The solution of the problem was a simple device, shown in Fig. 10, which gives the details of the reel and reel stand. It is automatic and winds the chain in regular courses one on top of the other, adapting itself perfectly to the speed with which the machine delivers its finished product. It will take from 500 to 2000 feet, the length varying, of course, with the size of the chain. The smooth running motion of the reel is obtained by means of a cam operated friction clutch, *e*. The cam *f* is operated by the lever *g*, the end of which is caused to ride on the strand of chain as it comes from the machine. A slight motion of the cam one way presses the

friction plates tightly together; a slight reverse motion releases them. When the chain becomes slack as it issues from the machine it permits the cam lever to drop by its own weight, thus engaging the clutch and setting the reel in motion until all the slack is taken up, when the lever is again lifted, throwing out the clutch and stopping the reel until more slack accumulates. The head which feeds the chain crosswise onto the reel reciprocates on a double thread revolved by the reel through a sprocket and chain connection, and insures the even distribution of the chain in layers.

For convenience in handling, the reel when on the stand is supported by two pairs of rollers underneath the rims, instead of being mounted on an arbor. One pair of rollers, *a a*, are driven to impart motion to the reel, their position being fixed. The other pair of rollers, *b b*, not driven, are arranged to swing by means of the lever *c* so as to pick up the reel from the floor of the stand and crowd it against the driven rollers. In swinging the lever *c* the moyable rollers are swung past a line drawn from the center of the reel to the center of the arms supporting the rollers, so that the weight of the reel holds the lever in its vertical position against a stop.

The processes of finishing the chain to insure its being of the required strength, pitch and finish were described in *The Iron Age* of November 8, 1900.

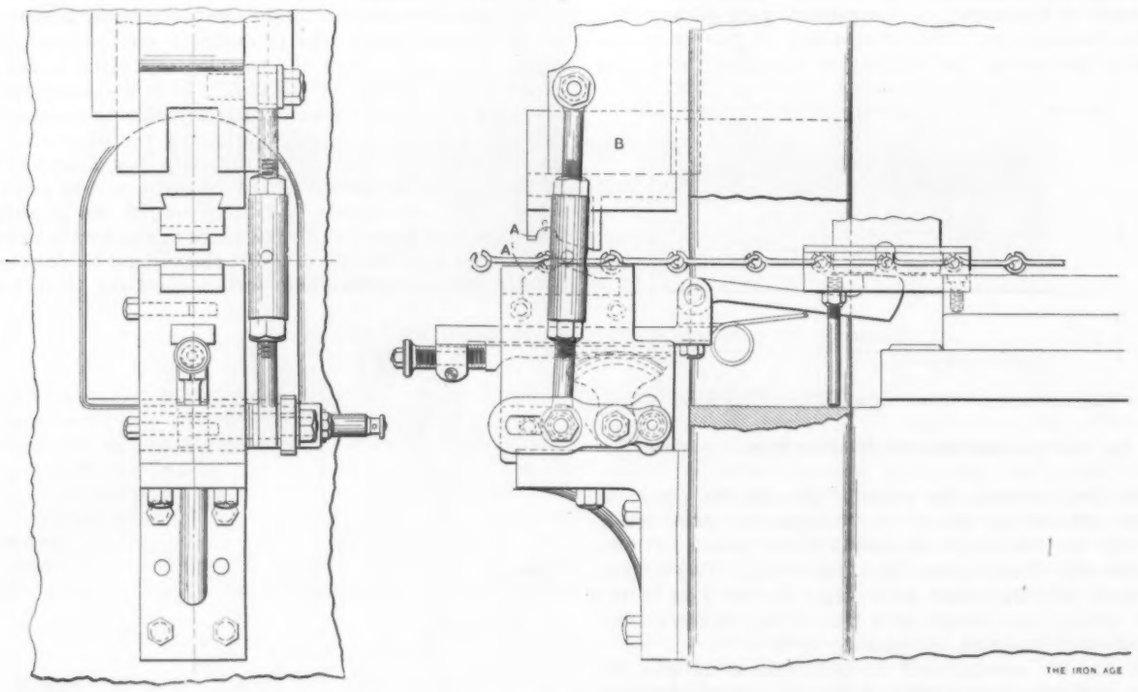



Fig. 9.—The Auxiliary Press Which Puts the Finishing Squeeze on the Hooks.

**A Skelp Rolling Record.**—On April 20, on two 8½-hour shifts, the record for rolling skelp at the Monessen mills of the Carnegie Steel Company, at Monessen, Pa., was broken. The day turn made 224,195 pounds and the night turn 224,405 pounds, making a total of 448,600 pounds in 24 hours, being the largest turn and the largest double turn record made in this plant since it has been in operation.

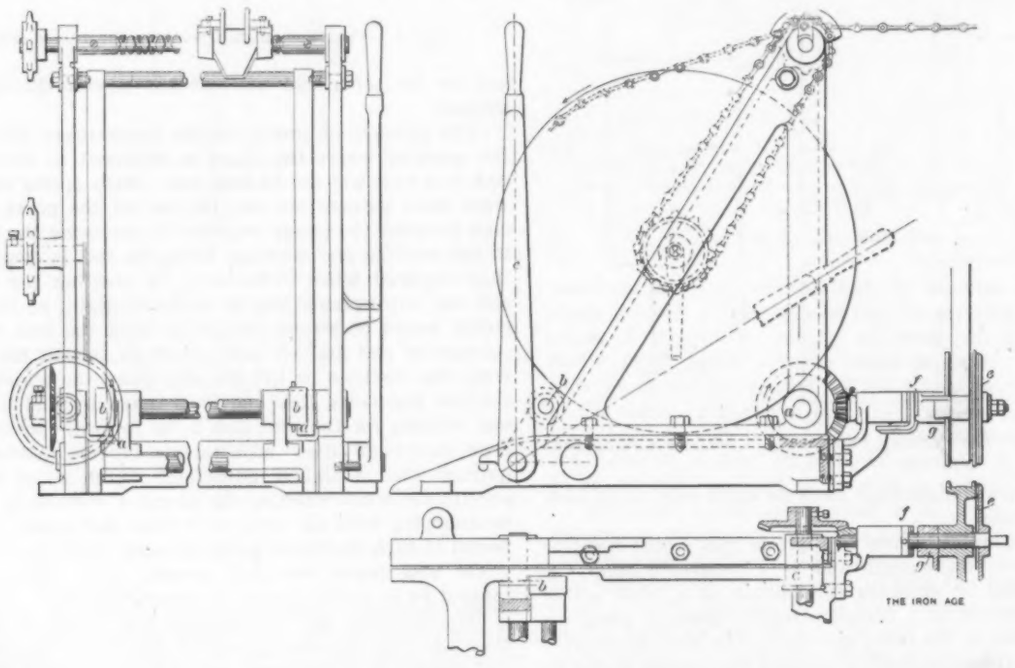



Fig. 10.—Detail of the Automatic Reel for Winding the Completed Chain as It Comes from the Machine.

## A Coal Problem in Great Britain.

GLASGOW, April 28, 1904.—The subject of the coal supply of the United Kingdom is occupying the attention of a Royal Commission, but meanwhile we in Scotland know that our great coal field in Lanarkshire is being steadily exhausted. And Lanarkshire is our great industrial center. At a reecnt meeting of the Mining Institute of Scotland R. T. Moore, the president, dealt with the development of the output of that and the other Scotch mining districts during the past 31 years. For the sake of comparison he grouped together the outputs from districts where the conditions of mining and the uses to which the coal is put are somewhat similar, and divided the Scotch output into the following five divisions:

1. The Ayrshire coal field, comprising the counties of Ayr, Argyle and Dumfries. The coals worked are principally the thick coals of the upper coal measures used for household, steam and blast furnace purposes, and are almost wholly disposed of for use in the country and for shipment to Ireland.

2. The Lanarkshire coal field, including Renfrew. The great bulk of the coals from this division come from the thick seams of the upper coal measures, and have been used for household and manufacturing purpcses for the supply of Glasgow and the industries of Lanarkshire, while they have been exported from Ardrossan, Greenock and Glasgow on the west, and Bo'ness and Grangemouth on the east.

3. The central district, comprising Dumbarton, Stirling and Linlithgow. The coals worked in this division are mostly the thin seams of Scotland, and from this district comes most of the Scotch seam or bunker coal. The markets for this coal have been the shipping ports of Glasgow on the west, and Bo'ness, Grangemouth and Leith on the east.

4. The Fife division, comprising the counties of Fife, Clackmannan, Kinross and Perth. The coals worked in this district are almost all thick coals, and supply the local demand in Dundee and the north of Scotland, and a large and increasing shipping trade for foreign export.

5. The Edinburgh district, consisting of Edinburgh and Haddington. The coals worked in this district are thick coals occurring in both the coal measures and the carboniferous limestone measures, and the market for the coals in this district has been largely a local one, the surplus having been shipped at Leith.

The output has thus developed in the past 30 years:

| | 1873.—Tons. | 1903.—Tons. |
|---|---|---|
| Lanarkshire | 9,377,686 | 17,359,123 |
| Ayrshire | 3,348,283 | 4,184,242 |
| Central | 1,573,827 | 4,389,670 |
| Fife | 1,787,027 | 6,913,194 |
| Edinburgh | 761,698 | 2,191,355 |
| Totals | 16,857,772 | 34,992,240 |

The total output rose suddenly from 1874 to 1875 and then declined down to 1879, when there was another sudden rise to 1881, after which there had been a steady and rapid rise, interrupted only by the miners' strike in 1894. The most striking feature in the output is the predominant position of Lanarkshire, which during the last 30 years has practically governed the coal trade of Scotland. But we are now nearing the end of our cheaply worked Lanarkshire thick seams. It may have been a pity to have worked them out so quickly and to have thrown coal away at such small prices, but the district has benefited, for the cheap coal brought industries to it. Twenty years ago, when the Hamilton pits were working nothing but ell coal, people thought that the "main" and "splint" would never pay, but nowadays circumstances are altered.

With the exhaustion of the Lanarkshire coal field we have to face the question of the continuance of the numerous industries which have been established. Once established, an industry takes a good deal to move. Mr. Moore does not think any difficulty need be experienced in keeping the industries going, even though no coal were in future put out in Lanarkshire. A similar situation was faced by the Coatbridge ironmasters, whose iron works were built to work the Airdrie blackband ore which was found in the neighborhood. When that seam was exhausted it was found that the works could be kept going on iron ore brought from Spain, and Coatbridge is still as important an ironmaking centre as it was when the native blackband ironstone was being worked.

The Lanarkshire works need not go so far for a supply of coal; there is plenty of it in Ayr, Fife, and the Lothians. There are already extensive developments in the two latter coal fields and the output from them is rapidly increasing. What is required is cheap railway rates, and these will have to come. There is no reason why coal should not be brought from the Edinburgh coal field to Glasgow for 2 shillings, or even 1 shilling and 6 pence, per ton, and if this were the rate the price of coal at Glasgow need not be higher than it is now. Our Scotch railways charge 1¾ pence to 2 pence per ton per mile, and even more when terminal charges are added for taking the coal into depots, where it is loaded into carts and carted to works. Motor wagons are now being constructed to carry at 2 pence per ton per mile, which is as cheap as the railway rate, and if they were used the coal might be taken direct from the colliery to the works, and the depot charges and cost of carting would be saved.

### The Improvement in Shipbuilding.

What I have said in previous letters about the improvement in shipbuilding here and in the North of England is supported by the official quarterly returns, which afford confirmation of the improving state of shipbuilding throughout the whole United Kingdom. The tonnage under construction now—988,664 tons—is 90,000 tons more than it was three months ago; it is also 14,000 tons more than at the same date of the previous year. A check has taken place in the decrease, which, setting in early in 1903, reached 117,000 tons by the end of September and 125,000 tons by the end of December.

The Clyde is now getting a share, more especially on its lower reaches, of the shipbuilding "boom" which is spreading throughout the country. But the east coast builders seem to be enjoying more of it than those in the west. British shipbuilders have more tonnage than usual under construction for foreigners. At the end of last year the foreign orders on hand were under 200,000 tons; at present they exceed 233,000 tons. Germany continues our largest customer, the amount building for her reaching 32,640 tons; Norway comes next, with 25,807 tons, and Austro-Hungary third, with 25,260 tons. The size of vessels is constantly going up. Nearly one hundred of over 4000 tons are under construction. Forty are over 5000, six are over 10,000 tons, and eight are of 15,000 tons and above. The warships under construction at the royal dockyard and in private yards number 74, with a displacement of 377,115 tons. Added to the vessels for the mercantile marine, the total tonnage in hand throughout the United Kingdom comes to 1,365,779 tons, a considerable increase over the tonnage at the end of last year.

## Dinner of the New York Iron and Steel Association.

The New York Iron and Steel Association held their first annual dinner at the Arkwright Club on Wednesday evening, May 4. This association is composed of the iron and steel merchants of New York and Brooklyn, who some months since decided that it would be to their advantage to become better acquainted with one another. The dinner was naturally the outcome of the cultivation of sociability. Albert H. Bragg of Egleston Bros. & Co., president of the association, acted as toastmaster in the post prandial exercises. Among those who were called upon for remarks were the vice-president, J. B. Carss of Ogden & Wallace, and the treasurer, John O. Williams of Vought & Williams; but the principal address of the evening was made by Arthur J. Lockwood, who grew eloquent in setting forth the benefits to be derived by the members of a trade as they grow to know one another more thoroughly through an association. Charles A. Wendell, a member of the bar, proved unexpectedly entertaining in speaking on the legal aspects of the iron and steel business. Frank L. Froment of Froment & Co., through whose efforts the members of the trade were brought together in an organization, expressed his gratification over the successful promotion of good fellowship thus accomplished. Other speakers among the members were J. H. Palmer of Ogden & Wallace, and A. C. Denman of Denman & Davis, and among the guests E. W. Parker of the Republic Iron & Steel Company, Wayland Smith of the American Steel Hoop Company, and Geo. W. Cope of *The Iron Age*. It was the unanimous sentiment of those present that the function of an annual dinner thus successfully inagurated should be continued as one of the features of the association.

## Investigating Chicago Switching Roads.

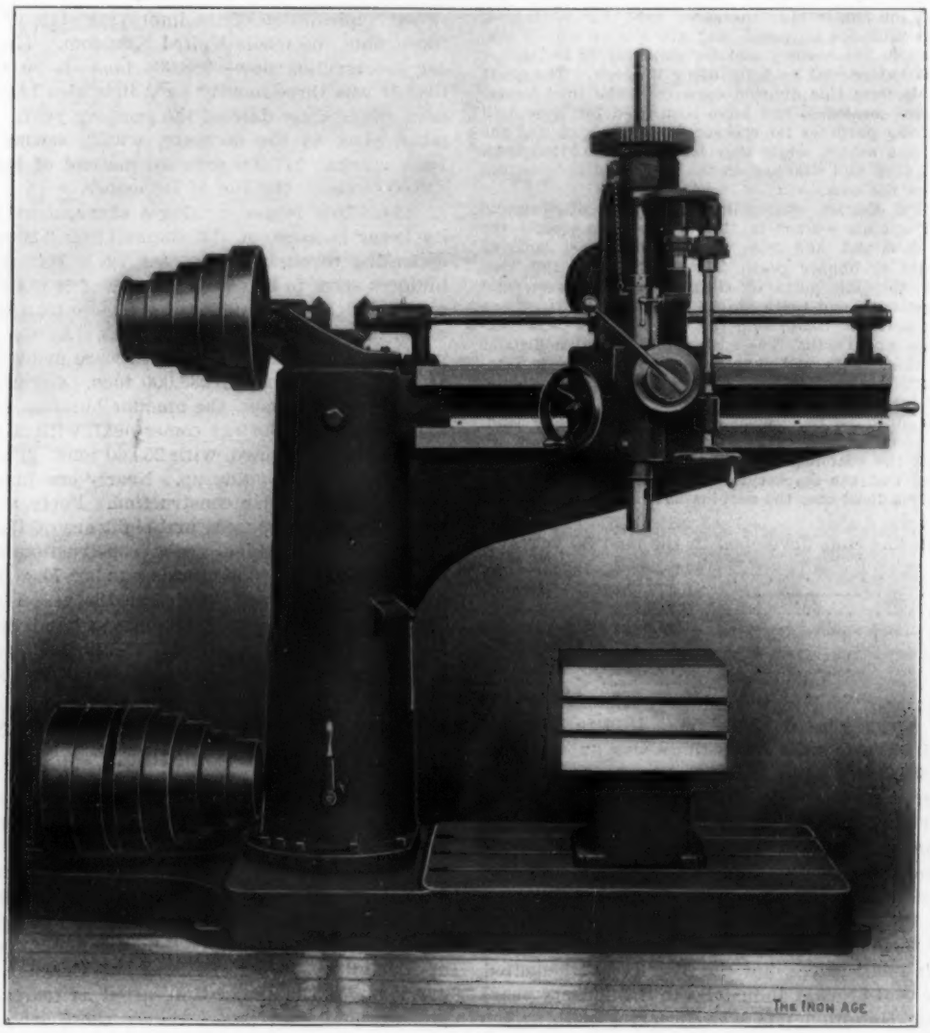
The Interstate Commerce Commission is taking testimony at Chicago with a view to ascertaining whether the high tolls charged by industrial railroads or switching roads owned by large shipping corporations are such as to bring them under the Elkins law. The transportation companies thus far taken under advisement are the Illinois Northern Railway and the Chicago, West Pullman & Southern, owned by the International Harvester Company; the Chicago, Lake Shore & Eastern, owned by the Illinois Steel Company, and the Merchants' Lighterage Company, owned largely by Hibbard, Spencer, Bartlett & Co. The testimony of railroad officials thus far taken shows that these switching roads are charging from 10 to 20 per cent. of the total freight bill for the handling of freight over a few thousand feet of track to and from trunk lines. One railroad official stated that the Illinois Steel Company were compelling his company to pay as high as 70 cents per ton for switching coke into the Illinois Steel Company's plant out of the $2.65 per ton which they charge for hauling the coke from the Connellsville region. The International Harvester Company's officials admitted before the investigating committee that their switching roads secured from $12 to $25 per car from roads delivering the cars to them. It was also stated in the testimony concerning the Merchants' Lighterage Company that Hibbard, Spencer, Bartlett & Co., and Reid, Murdock & Co. compelled roads to pay from 3 to 5 cents per 100 pounds for delivery of freight to the roads from the lighters.

Joel Farist of the Farist Steel Company, Bridgeport, Conn., is seriously ill.

## The Bickford Semi-Radial Drill.

To meet the demand existing among steel car shops, railroad shops, boiler factories, steel plants, &c., for a heavy radial drill capable of withstanding most severe duty on plain work, the Bickford Drill & Tool Company of Cincinnati, Ohio, have just perfected what they term their "Semi-Radial." The chief characteristics claimed for this machine are rigidity, simplicity and durability which, combined with a high ratio of transmission gears, make it a desirable tool for many classes of work. It possesses sufficient power to drill 3-inch holes in steel.

In considering the rigidity and simplicity of the machine it will be noted that the frame consists of but five parts—the base, column, cap and arm and arm shaft.




THE BICKFORD SEMI-RADIAL DRILL.

Each of these is so proportioned as to prove commensurate with the continuous severe work expected of a machine of this character. A rib is cast through the center of the entire column, which stiffens this member considerably. The arm swings 180 degrees, and all chance of going beyond this radius to the detriment of the driving mechanism on the column is eliminated by the presence of limit stops.

The head, on which all bearings are of uncommon length, consists of a single casting, and is adjustable on the arm by means of a spiral gear, which gives it an easy, quick motion. The spindle, which is made of hammered steel and has an unusually long vertical adjustment for a machine of its size, is provided with both hand and power feed and quick advance and return. The feeding mechanism furnishes three rates of feed, advancing by even increments from 0.008 to 0.016 inch per revolution of spindle, each of which is instantly available by means of the standard Bickford drive key. The latter en-

gages or disengages the feed gears through the movement of the pole pin shown directly underneath these gears.

The driving mechanism contains but seven gears, the pitch and periphery speed of which are conducive to long life. The speeds are five in number and advance in geometrical progression from 50 to 170 revolutions per minute. The intermediate bevel gear, shown on the top of the column, is an idler simply set into a cup bearing and serving merely to transmit power from the upper cone shaft, which is fixed to the column, to the horizontal driving shaft of the swinging arm.

A very essential point of construction is the special bearing and method of support of the upper driving cone. This is so arranged that the short driving shaft itself is relieved of all bearing strain. The details of this construction are shown in Fig. 2. It will be noted that the bearing of the cone is upon the outer surface of a projecting sleeve, which is part of the cap bolted to the top of the column. The cone, it will be seen, is keyed to the outer end of the driving shaft, which runs through the projecting sleeve of the cap.

The general dimensions of the machine are as follows:

| | |
|---|---|
| Diameter of spindle, least section | 1 13-16 inches. |
| Spindle bored to fit Morse taper | No. 4 |
| Traverse of spindle | 18 inches. |
| Horizontal range of head | 3 feet 6¾ inches. |
| Receives under spindle over table | 24 inches. |
| Receives under spindle over base | 4 feet. |
| Receives under spindle over floor | 4 feet 7 inches. |
| Drills work in plane of base to center of | 8 feet. |
| Size of table, working surface | 20 x 20 inches. |

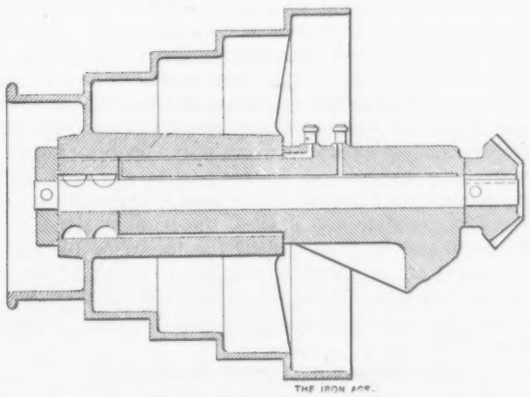


Fig. 2.—Details of Special Bearing for Upper Driving Cone.

| | |
|---|---|
| Size of base, working surface | 3 feet x 4 feet 1 inch. |
| Distance from floor to extreme hight of spindle | 9 feet 4¼ inches. |
| Number revolutions of driving pulley to one of spindle | 6.9 |
| Maximum diameter of driving cones | 18 inches. |
| Size of tight and loose pulleys | 3¼ x 18 inches. |
| Width of cone belt | 3 inches. |
| Speed of countershaft | 350 revolutions. |
| Floor space required | 9 feet 3 inches x 11 feet 9 inches. |
| Weight, net | 5,500 pounds |

The lever for shifting the belt on the tight and loose pulleys is placed in a very convenient position at the lower portion of the column.

## Merchant Marine Legislation.

WASHINGTON, D. C., May 6, 1904.—The complete programme of the advocates of legislation in aid of the American merchant marine was carried through successfully in the closing hours of the session of Congress just ended. The measures that have thus been placed on the statute books include Representative Gardner's bill authorizing the appointment of a commission to consider and recommend legislation for the development of the American merchant marine, and Senator Frye's two measures extending the coastwise laws to the Philippine Islands and requiring the transportation of Government stores in American bottoms. Time barely sufficed for the passage of the Commission bill and the measure relating to Government stores and for the adjustment of amendment thereto, but, by skillful work on the part of their friends, both measures were laid before the President in time to receive his signature before the adjournment was taken. Much credit for this succcessful outcome is due to Winthrop L. Marvin, who had charge of the measures on behalf of the shipbuilding and shipowning interests, and who very tactfully surmounted the many difficulties that arose during the session.

### Commission Bill.

The text of the Commission bill, which was materially amended during its discussion in both houses, was finally adopted in the following form:

*Be it enacted, &c.,* That a commission is hereby created, to be called "The Merchant Marine Commission," to be composed as follows: Five members of the Senate of the United States and five members of the House of Representatives of the United States, to be appointed by the presiding officer of each house of Congress respectively; *Provided,* That at least two of the said members of the Senate and two of the said members of the House of Representatives shall be members of the minority party.

Sec. 2. That it shall be the duty of this commission to investigate and to report to the Congress on the first day of its next session what legislation is desirable for the development of the American merchant marine and American commerce, and also what change or changes, if any, should be made in existing laws relating to the treatment, comfort and safety of seamen in order to make more effective the seafaring calling in the American merchant marine.

Sec. 3. That the commission shall give reasonable time for hearings, if deemed necessary, and if necessary it may appoint a subcommission or subcommissions of its own members to make investigation in any part of the United States, and it shall be allowed actual necessary expenses for the same. It shall have the authority to send for persons and papers and to administer oaths and affirmations. All necessary expenses, including clerks, stenographers, messengers, rent for place of meeting, and printing and stationery, shall be paid from any money in the Treasury not otherwise appropriated; however, not to exceed $20,000 for expenditure under this section, to be paid upon vouchers to be approved by the chairman of the commission.

Sec. 4. That any vacancies occurring in the commission, by reason of death, disability or from any other cause, shall be filled by appointment by the officer and in the same manner as was the member whose retirement from the commission creates the vacancy.

Promptly upon the signing of the bill by the President the commission was announced by the presiding officers of the two houses as follows: Senators Gallinger of New Hampshire, Lodge of Massachusetts, Penrose of Pennsylvania, Republicans; and Martin of Virginia, and Mallory of Florida, Democrats; Representatives Grosvenor of Ohio, Minor of Wisconsin, Humphrey of Washington, Republicans; Spight of Mississippi, and McDermott of New Jersey, Democrats. The commission held a meeting on April 29, at which Senator Gallinger was elected chairman, and it was decided to begin a series of hearings on May 23, at 2 p.m., at the Chamber of Commerce in New York.

The following sub-commissions were named: For the North Atlantic Coast—Senators Gallinger, Lodge and Penrose, and Representative McDermott; for the South Atlantic Coast and Gulf Ports—Senators Martin and Mallory and Representatives Minor and Spight; for the Pacific Coast and Great Lakes—Representatives Grosvenor, Minor, Humphrey, and Spight. It is expected that these different subcommissions will hold hearings at important cities within their respective territories. W. L. C.

## Boats Replacing Drays in Chicago.

The Merchants' Lighterage Company are a new corporation, backed principally by Hibbard, Spencer, Bartlett & Co., Chicago, whose object it is to run a line of lighters on the Chicago River to carry freight that would otherwise have to be teamed across the city. Two boats are already in operation and doing a good business, and contracts are being negotiated with large shippers of freight whose manufactories or places of business are on or near the river, by which it will be possible for these firms to reduce the number of drays in operation and to effect a saving of time, if not money, in the transfer of freight back and forth from freight depots. Nearly all the Western railroads have docks on the south branch of the Chicago River, and freight to these roads can be handled advantageously by lighters. The plan is welcomed by Chicago business interests because it serves to relieve somewhat the congested condition of the streets in the down town district and because it will serve to lessen the power of the teamsters' union, whose arbitrary conduct during the past two or three years has been a source of much annoyance and expense.

# The Louisiana Purchase Exposition.

### The Electrical Building.

Continuing the description of the St. Louis World's Fair begun in last week's issue, we come to the Electrical Building. This will be one of the centres of attraction for the scientific and engineering fraternity the world over. Its aspect on the opening day was too incomplete to permit of individual descriptions of more than two or three exhibits, and its general consideration will have to be left for a future article.

The General Electric Company occupy Section 28, with 10,000 square feet of space. In a corner of the exhibit is a model in staff of their turbine water wheel at Niagara Falls. This model is about 20 feet high and 20 feet in diameter. Aside from this model the exhibit is a working exhibit. Included in it are a 60,000 volt oil switch, which receives a 6600 volt 25 cyclo current from the Exposition service, and sends it through frequency change and motor generator sets, which makes it available for arc lights. The searchlight on the dome of the exhibit will be in operation and will search out the dark corners of the building for the benefit of visitors. A current of from 700,000 to 1,000,000 volts will be passed through their lightning arrester and discharged three or four feet away, making a vivid flash, which will attract widespread attention. The body of an electric motor car will form another attraction. It is elevated 7 feet above the floor, so that visitors may walk under it and study the mechanism which drives the modern motor car. The mechanism, which is of the Sprague General Electric type, will be in operation.

The Standard Underground Cable Company, Pittsburgh, and the McRoy Conduit Company, Brazil, Ind., have united in exhibiting modern methods of protecting underground wire systems by means of conduits. This also is an active exhibit, as a cable will be drawn backward and forward through the conduit by means of a reel and capstan.

The Automatic Electric Company, Chicago, are fitting up an attractive booth in Section 24, which will be in effect two model automatic telephone exchanges, each of 100 stations and each demonstrating the 10,000 type system. These will be operated in conjunction to illustrate how calls can be made automatically between exchanges without the loss of time or any extra effort on the part of the subscriber. A toll board of twenty lines will also be in operation. This board will be connected with the automatic exchanges and will demonstrate the way in which automatic subscribers are given toll line connection. The accessorial apparatus will be of the latest and most approved type, and will include one 200-line Cook cross-connecting board, equipped with carbon lightning arresters and heat coil protectors, two sets of 26-cell 24-amphere hour storage batteries, one slate power board mounted with circuit breaker and switches for controlling the current, two ¼ horse-power charging machines, and two 1-6 horse-power ringing machines.

The American School of Correspondence at Armour Institute of Technology, Chicago, has an exhibit in the Electricity Building. One of the chief items of interest will be a map 12 feet by 6 feet showing the distribution of thousands of electrical engineering students of this school scattered throughout the world. The interior of the booth will be arranged in the form of panels, in which will be inserted drawings made by students. In addition to this will be a number of specimens of students' work, most of which will refer strictly to electrical engineering. The school will also have apparatus illustrating its instruction in telegraphy, telephony, storage batteries and dynamo and motor work.

Other noteworthy exhibits in this building will be those of Westinghouse Electric & Mfg. Company, National Electric Company, Bullock Electric Company, Wagner Electric Company, and Western Electric Company.

### Wireless Telegraphy at the World's Fair.

Dr. Lee De Forest, the inventor and patentee of the American De Forest Wireless Telegraphic Company's devices, is giving the installation of the system on the World's Fair grounds his personal attention. It will be one of the most noteworthy and memorable features of the Louisiana Purchase Exposition. The central exhibit will be in the Palace of Electririty, where are shown the sending and receiving apparatus and, in fact, all the mechanism connected with the De Forest system. A 300-foot tower has been erected near the main parade entrance, another tower back of the Jerusalem Concession, while three towers in the De Forest exhibit itself arise through the roof of the building. These towers are built of wood and are exact reproductions of the trans-Pacific station which is now being built by the De Forest Company at Seattle, Wash. The towers are 75 feet high, arranged in the form of a triangle. Heavy cables connect the tops of the towers, and over these a network of wires comprising the "antennae" is hung. A receiving and sending station is also installed in the Government Building and in the Transportation Building. In addition to this two wireless auto cars will take part in parades and travel back and forth through the grounds, sending messages to each other for the benefit of visitors.

During the fair commercial messages will be sent by wireless telegraph from the grounds to a station in the centre of the city of St. Louis, a distance of about 4½ miles. Messages will also be sent to and received from other points as far distant as Kansas City, Omaha, Springfield, Ill., and toward the close of the Exposition, to Chicago. St. Louis newspapers have arranged with the De Forest Company for news service from the fair grounds, and it is hoped by the inventor that he can perform a similar service for newspapers in Kansas City, Omaha, and other points. This is said to be the first instance in which wireless telegraphy will be regularly used for the transmission of news service over land. The apparatus in use by Dr. De Forest is extremely simple as compared with the Marconi system, and is in no way connected with the Marconi system in the mechanism. The sender resembles very much the ordinary telegraphic key, and the receiving apparatus worn by the operator consists of ear pieces adjusted to the ears by means of a metal clamp passing over the top of the head. The signals come in the form of dots and dashes, the regular Morse code being used, and are recorded by the increased resistance to the force of electricity in the local circuit of the receiver. This is what Dr. De Forest calls the "anti-coherer" principle, in contradistinction to the "coherer" system used by Marconi.

### The Palace of Varied Industries.

As its name implies, this building is devoted to a great variety of industries. In the main, however, the industries represented are such as appeal to the æsthetic sense in household and office furnishings, in wearing apparel, jewelry and the like. The French exhibits in this building are exceptionally rich, while Japan is not a whit behind. Only a few exhibits in this building pertain directly to iron and steel industries, and these are arranged along the northern wall of the building.

The Art Metal Construction Company, Jamestown, N. Y., and St. Louis, have an interesting display of ornamental sheet steel office and bank furniture, including roll top desks, flat top tables, filing cases, library stacks, roller shelf cases with curtains, bank counters with marble fronts, and, in fact the whole range of office, bank and library furniture made from steel throughout and fire proof. George D. Barnard, a manufacturer of ledgers and business books in general, shares in this exhibit.

The Globe-Wernicke Company, Cincinnati, Ohio, are preparing to install an exhibit of filing cases, card indexes, and the like.

The Tuttle & Bailey Mfg. Company, New York, have a noteworthy exhibit of exclusive specialties in wall and floor registers. Their regular exhibit is in the Manufactures Building, but the exhibit in the Palace of Varied Industries is devoted to high art goods exclusively. Included in it are solid bronze and gold and silver plated registers in all sorts of rich antique designs, many of them being duplicates of registers installed in expensive residences and in such hotels as the Holland, Manhattan, and Waldorf-Astoria.

The Chamberlain Metal Weather Strip Company, Detroit, have a booth whose windows are equipped with their metal weather strips and with other modern devices, such as Gresey's patent window pivot hinge for French

windows, Tabor revolving sash, Chamberlain metal weather strip, and the like. H. E. Kenney, superintendent of the company, is in charge of the exhibit.

The Smith & Davis Mfg. Company, St. Louis, have a space 75 feet by 125 feet, in which they show wire steel mattresses and couches, steel beds, and a line of hospital furniture. Their exhibit consists, in part, of model bedrooms, but the most popular feature will be the operation of the Lloyd automatic weaving machine, which will make wire mattresses on the spot.

The Berger Mfg. Company, Canton, Ohio, show a complete line of sheet steel office furniture, filing cases, tables, vault trucks, &c. Their booth is located in Block 9, and is in the care of Walter W. Stevens. The booth is wholly made of metal, and was produced in its entirety in the shops of the company. It is in the Doric style of architecture, having columns, &c. The interior of the booth is handsomely finished in ivory white, and the columns are in imitation of Italian marble with the capitals in silver. The general scheme of the interior finish is for the purpose of setting off the beautiful and harmonious decorative possibilities in colors secured through the use of Berger's classified designs in metal ceilings and side walls. The extensive line of sheet metal productions of this firm are well shown in the booth, including a line from their steel furniture department, showing up to date and skillful construction.

Landers, Frary & Clark, New Britain, Conn., have an exhibit in the center of the building showing their cutlery and specialties, but the exhibit is not yet sufficiently complete to describe.

The Goshen Mfg. Company, Goshen, Ind., will have a display of lawn swings, baby jumpers and kindred specialties.

### The Transportation Building.

The whole Transportation Building is in so unfinished a state that a description of its exhibits in detail will have to be left for a future article. The most noteworthy feature of that building is, of course, the great testing plant built by the Pennsylvania Railroad Company. During the life of the fair 12 locomotives, of which two are German and one French, will be thoroughly tested by a corps of experts employed by the company. It is not likely that the first test can be made until about June 1, as the machinery is not quite complete. The company will also maintain, for the direction of the engines tested, a staff of attendants and computors, who will provide supplies of fuel and who will meet all other fixed charges incident to the progress of the work. An advisory committee has been called to the aid of the railroad to assist in matters of scientific interest. The plant consists of supporting walls, upon which will be carried the drivers of the locomotives to be tested; friction brakes on the shafts of the propelling walls, and a registering dynamometer of 30,000 pounds capacity, to which the draw bar of the locomotive will be attached, together with all necessary mechanism for operating the plant and obtaining the desired data. No locomotive or type of locomotive will be accepted which has not demonstrated its practicability by actual service. A careful tabulation will be made of all the results of the test, which will be published by the company for the benefit of the railroad world at large. At the conclusion of the fair the testing apparatus will be removed to the company's plant at Altoona, Pa. William Sellers & Co., Incorporated, Philadelphia, are constructing the testing apparatus.

The general scheme of the Transportation Building groups each of the various methods and means of transportation together. For instance, at the east end of the building all space is devoted to automobiles, and there is a polished floor on which the autos will be exhibited. It is expected to be the largest automobile show of history, larger than either the New York or Chicago show, that were devoted exclusively to automobiles.

The center of the building is devoted to showing locomotives and cars of various types, including the old "Rocket," and showing the intermediate steps of progress, from the primitive rolling stock of early days to the modern palace car.

The southeastern part of the building is given to France and Germany, and the northeastern to Great Britain and Japan marine exhibits, and the Pennsylvania testing floor.

The northwestern section and the whole eastern end of the building are devoted to carriages, wagons, harness, and related lines. A union ticket office will be at the eastern entrance of the building, in which a force of clerks will sell tickets and reserve berths for World's Fair visitors.

One of the few exhibits that is now complete is that of the Shelby Steel Tube Company. The sides of the booth are built from 2-inch 11-gauge locomotive tubes, and the center from 4-inch 10-gauge merchant tubes, 22 feet long. Rope tubing, square tubing, tapered and special shapes enter into the ornamentation of the booth. A remarkable feature of this exhibit is a table top case in which are grouped under a heavy plate glass 3000 pieces of seamless tubing of hundreds of different shapes and sizes, the whole effect being as graceful and artistic as a piece of lace.

The Railway Appliance Company, Chicago, will occupy a space in aisle E, where they will exhibit particularly their Bonanza rail joint, sections showing the heavy and light construction, also the insulated joint and a sample showing the joint as particularly made for the Pennsylvania Railroad. They will also show samples of their Fewings car replacer, Q. & C. Bryant rail saw, and will exhibit, in connection with the American Car & Foundry Company, their Ajax vestibule diaphragm. On a Vandalia locomotive exhibited by the American Locomotive Company they will show their Q. & C. Stanwood tread in the way of a footboard.

### The Hall of Agriculture.

The Hall of Agriculture is the largest structure on the grounds, and contains the largest display of implements and agricultural products ever put under one roof. Only a small percentage of the exhibits are of immediate interest to our readers, and many of these are not sufficiently advanced to permit of description in this article.

The Aermotor Company, Chicago, will occupy a plot of ground 75 feet by 100 feet at the southeast corner of the building, on the street which leads from the agricultural to the Philippine exhibits. They are constructing a new building for the purpose of housing that part of the exhibit which necessarily must be under cover, and will in this building, which is to take the form of a modern barn, illustrate the various methods of grinding and handling feed by means of power produced by a geared or power aeromotor. They will exhibit as a windmill tower the trussed tripod tower, the arrangement of the bracing of which seeks to eliminate the girts and braces at the bottom found in the ordinary tower, which obstruct the head room in the passage to the pumping devices placed beneath the tower. The other new feature of their exhibit is the twin tower for supporting the high voltage electric tower transmission wires. They find as a side development of the steel windmill tower a growing demand for a steel tower to replace wood poles on long line transmission service. In addition to the above-mentioned features of their exhibit they will show a full line of village, suburban, ranch and farm water supply goods, with all of the auxiliaries for such outfits which they manufacture.

The Chicago Flexible Shaft Company, Chicago will exhibit a full line of clipping and shearing machines, including the Stewart sheep shearing machine, with which they purpose making actual demonstrations. They have 400 square feet of space.

The W. N. Durant Company, Milwaukee, Wis., have an exhibit in the flour mill section consisting of about 15 different sizes and styles of counters which they make. In addition to this exhibit the Durant counters will be shown attached to a number of different kinds of machines, such as punching presses, printing presses, paper folders, &c.

The Root & Van Dervoort Engineering Company, East Moline, Ill., will show six gas and gasoline engines.

The Stover Mfg. Company, Freeport, Ill., will have an exhibit in Section 36, block 3, in the outfield assigned to windmills occupying a space 75 feet by 115 feet. They will erect a building on their section and will show their full line of windmills and feed mills.

The Sturges & Burn Mfg. Company, Chicago, are in block 55, Agricultural Building. Within a space 40 feet wide, surrounded by nickel plated railing, they show many varieties of milk cans; specialties in creamery supplies and apparatus, including the Sturges improved pasteurizer; the Boyd cream ripener; the Dairy Queen combined churn for working butter and churning the cream. Other specialties noted are the Sturges seamless steel cheese hoops, the Sturges steel dairy churn, the Sturges rotary milk pump, the IXL skim milk pasteurizer, Perfection and Clipper milk coolers, besides a complete line of dairymen's tinware.

The Wilke Mfg. Company, Anderson, Ind., have an exhibit in aisle A, block 123, in charge of Thomas N. Stilwell. They have 1000 square feet of space, in which they display the regular Crystal line of refrigerators and several special glass lined novelties, including exteriors in solid mahogany, birdseye maple, Flemish and weathered oak, and fronts in combinations of cut glass, mirrors and tile. In connection with one of their glass lined oak exterior models they will assemble a complete diminutive refrigerating plant, actuated by ¼ horse-power electric motor. This machine is the product of the Brunswick Refrigerating Company, New Brunswick, N. J.; is automatic in its operation, and produces and maintains a very low temperature within the provision compartment. The second novelty is a line of their porcelain cigar cases, and the third is their triple cooler, in which there are three enameled iron tanks, the central one being for ice water, chilling the adjacent tanks, which may be used for cream, milk or any other liquid.

The Bettendorf Axle Company, Davenport, Iowa, will occupy block 24, 20 feet by 31 feet, showing full lines of farm trucks, gasoline engine trucks and farm wagons. They also have an exhibit in the Transportation Building, 120 feet on track E, near aisle 4, consisting of trucks, bolsters, steel cars, and railway equipment.

### The Philippine Concession.

As a result of the expenditure of $1,000,000 by the Philippine Government, a large tract in the western portion of the the grounds is devoted to displays that accurately represent present day civilization in various islands of the Philippine group. This bids fair to be one of the most popular features of the Exposition and may play no inconsiderable part in the crystallization of public opinion on the attitude of the United States toward its new Oriental possessions.

The William Bayley & Sons Company, Milwaukee, Wis., have installed in this concession a duplex 120-inch ¾-housed induced draft apparatus, which has wheels 6 feet in diameter by 42 inches wide. Each fan is driven by a direct connected horizontal engine having cylinders 7 inches in diameter by 8 inches stroke. Besides this induced draft apparatus they also have a 9 x 8 vertical automatic inclosed rim oil bearing engine, direct connected to a Fort Wayne Electric 20-kw. generator. This generator set is to be used as the exciter for the alternating generators. Besides this, they also have on exhibition one of their 5 x 7 vertical inclosed automatic engines, having ring oil bearings, direct connected to a Northern Electrical generator and on exhibition in the latter company's display.

### A Word About the Pike.

The Pike, which corresponds to the Midway at the Chicago Fair, is an L-shaped plat extending along the whole northern edge of the grounds around Skinker road and terminating in the Jerusalem concession, just west of the cascade fountain. While many of the exhibits are bizarre and purely for amusement purposes, there is yet much of technical and scientific interest in this long array of concessions. For instance, the machinery equipment furnishing the lights and power to the Tyrolean Alps is one of the greatest installations of the kind ever made. The concession devoted to the Siberian railroad, the mining camp, the naval exhibit, the fire fighters, the panorama, New York to the North Pole, and a number of the other concessions have features of great educational value to the student of engineering and industrial progress.

### World's Fair Notes.

M. A. G. Himalaya, a Portugese priest from Lisbon, Portugal, and a professor of science in a college in Porto and Coimbra, has arrived with a novel invention by means of which he promises to melt anything by the agency of the sun's rays. Space has been granted him outside the Palace of Liberal Arts, where he will install apparatus weighing 30 tons and occupying 60 x 100 feet of space. It consists of giant lenses, which concentrate the rays of the sun from a large area at a focal point.

Exhibitions to demonstrate the properties of radium and radio-active minerals will begin within a week or more in a theater now being installed in the Palace of Mines and Metallurgy. Dr. George F. Kunz will give the demonstrations. In connection with the demonstrations the largest and most comprehensive exhibit of radium and radio-active minerals ever collected will be shown. The collection comes from the Welsh-Loftus Rare Metal Company, Buffalo, N. Y., where it was prepared under the direction of Dr. S. L. Lockwood. The exhibit comprises radium chlorides and bromides (radium has never been separated from these compounds), radium ores and solutions, cerium, thorium and uranium oxides and other compounds of these rare radio-actives. Dr. Kunz has charge of the exhibit.

The mineral exhibits of 11 States and Territories were 100 per cent. complete when the Palace of Mines and Metallurgy opened its doors. These States were as follows: Arizona, Idaho, Indian Territory, Kansas, Montana, North Carolina, Oklahoma, South Dakota, Utah, Wyoming and Maryland. All have received credits of 10 per cent. in the contest for the gold medals which will be given to the best exhibits. Other States very nearly complete were Georgia, Nebraska and Tennessee, having their exhibits within 5 per cent. of completion.

The colors to be used in lighting the focal feature of the exposition—the Colonnade of States, the restaurant pavilions and Festival Hall—are canary, emerald, crimson and opal. Twenty thousand of each color of lamp, except opal, will be used. These are now being shipped by the General Electric Company, Schenectady, N. Y. Of opal 30,000 lamps will be used, because the cascades will be lighted only with this color lamps.

In speaking of the opening of the Exposition, Chief E. B. Ellicott of the electrical department says: "We established a record in starting the mechanical features. In one minute and nine seconds after the signal was given the water was flowing over the cascade. In view of the fact that to do this the engines had to be started, the dynamo adjusted to the proper voltage, the power transmitted to the cascade pumps and the water lifted to the Festival Hall, the performance was a remarkable one."

A cablegram was received from St. Petersburg May 7 by Director of Exhibits Skiff of the World's Fair saying that Russia will make an elaborate exhibit. Russia, before the war with Japan, had planned to be represented at the fair, but subsequently decided to abandon its proposed exhibit. This decision has now been reconsidered. The Russians will take 20,000 square feet in the Varied Industries Building, and will also be represented in the Liberal and Fine Arts.

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The Armour Institute of Technology, Chicago, announce their summer courses of instruction in engineering and mechanical lines, the summer school to open June 27 and continue six weeks. The courses include mechanical engineering; practical shop work, in which are embraced carpentry, turning and pattern making, forging, pipe fitting, foundry practice, machine tool work and instrument making; mechanical drawing; electrical engineering, in six courses, including both theoretical and practical work in telephony, dynamos and motors, alternators, transformers and arc lighting; civil engineering, in two courses, including plane surveying and engineering field practice; chemistry, in five courses, including general and analytical chemistry, engineering and organic chemistry and blow piping. Beet sugar chemistry is given a special course. Courses in physics, mathematics, German and French are also offered.

## Buffalo High Efficiency Centrifugal Pumps.

One of the latest products of the Buffalo Forge Company, Buffalo, N. Y., is a high grade centrifugal pump. These are daily coming into greater demand both in large and small sizes for operating under heads up to 100 feet, and to as high as 2000 feet when compounded.

The advantage of decreased steam consumption which the centrifugal pump has over the ordinary type of direct acting reciprocating pump heretofore has not been sufficiently appreciated. This increase in economy is evident when it is considered that a constant efficiency as high as 80 per cent. or over can be secured with a centrifugal pump, against a corresponding mechanical efficiency for the reciprocating pump of approximately 30 per cent. for a lift of 10 feet, or 80 per cent. for a lift of 70 feet. The steam consumption in the latter is from 40 to 60 pounds per horse-power per hour, while in the former with high grade high speed engines the consumption per horse-power per hour may always be kept under 30 pounds, and may be as low as 18 pounds with compound condensing high speed engines, which are made for comparatively small units. In addition, the centrifugal pump of the common type possesses the peculiar advantages of simplicity, freedom from wear and ability to handle liquid containing solid matter in suspension, such as mud, sand, sticks, ore and even fair sized cobble stones, without choking the pump or in any way interfering with its operation.

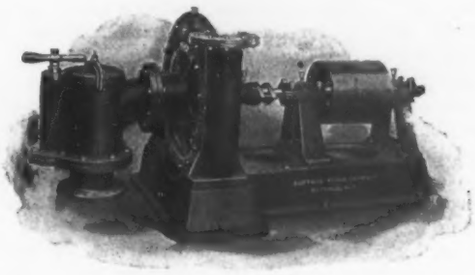

Fig. 1.—Belt Driven Centrifugal Pump with Hand Primer.

Until recently but little has been known in this country concerning the theory of the centrifugal or turbine pump, and its possibilities have not been fully appreciated. Lately, however, greatly increased activity has been displayed in this field, with the result that the essential elements of design are now quite generally understood. These features include the proper proportioning of the runner or impeller for the highest efficiencies under various requirements, the effect of changing the angle of the blades either forward or backward, and the number and length of blades for the highest efficiency; also the use of guide blades or waterways, similar to those used in water power turbines. The problem of compounding has been undertaken and solved with highly satisfactory results, so that the head which can be secured with this type of pump at a moderate speed is practically unlimited.

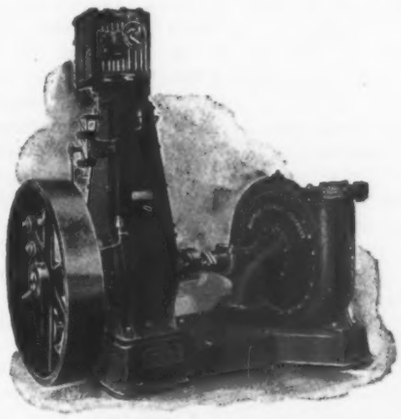

Fig. 2.—Double Discharge Pump Direct Driven by Simple Engine.

The centrifugal pump of the past has been a very simple machine, to which the present high pressure compounded pumps, with its numerous guide blades and water-ways, bears little resemblance. The difference in efficiency is as marked as that in appearance. Where the old style pump gave ordinarily an efficiency of about 50 per cent. and could only pump economically to heads under 50 feet, the pumps of the latest designs give efficiencies as high as 80 or 85 per cent., and when compounded are frequently used for heads above 1000 feet.

The Buffalo centrifugal pumps are made in various types and designs, depending upon the nature of the work to which they are subjected, such as pumps for hydraulic dredging, sand pumps for handling gravel and sand, and mining pumps for handling ore; also special compound pumps for working against high heads at low rotative speeds. These pumps are designed to be belt driven or to be direct connected either to electric or water motors or Buffalo high speed engines. Compounded sinking pumps are also built. These are usually constructed with motor direct attached to vertical shaft, and are exceedingly compact in arrangement. This pump may be operated with an efficiency as high as 80 per cent., and at depths up to 2000 feet. Fig. 1 shows the usual type of pump of smaller sizes for belt connection. These are built with either one or two inlets, and may be provided with a hand primer, as shown in the illustration. Fig. 2 shows a double discharge Buffalo pump direct connected to a single vertical high speed engine. This is an excellent arrangement for ordinary service. Fig. 3 illustrates a Buffalo centrifugal pump direct connected to a Buffalo cross compound engine of the marine type. In this arrangement an exceedingly high grade unit is obtained, which may be recommended for all cases where a high efficiency and a low steam consumption are desired. The same engine direct connected to a Buffalo dredging pump makes a very desirable unit for hydraulic dredging.

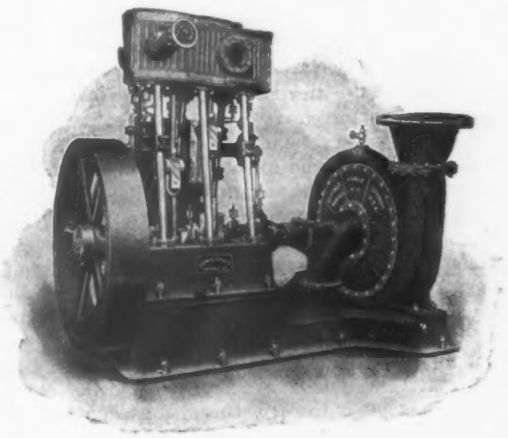

Fig. 3.—Centrifugal Pump Direct Connected to Compound Marine Type Engine.

Ample facilities are provided at the Buffalo Forge Company's testing laboratory for subjecting these pumps to a thorough commercial test, thus enabling the accurate determination of the relative merits of any design and its performance under given conditions.

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The Southern furnace companies are doing remarkably well in meeting the conditions now prevailing in the iron market. Information has been received covering the operations of one of the leading companies, owning several furnaces, whose average pig iron cost for a recent month was found to have been $7.95 per ton, and for one week was $7.39. With individual furnaces the cost for some days was as low as $7.12 and in others as high as $8.06, depending upon special conditions.

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The National Tube Company exported in April about 4000 tons of tubular goods.

# Lake Iron Ore Matters.

### No Ore Going from Mines.

DULUTH, MINN., May 9, 1904.—Practically no ore is yet moving from upper lake mines to docks, though this is about 30 days later than the traffic generally begins. The dullness in the ore trade is not solely responsible for this delay, as labor troubles along the lakes have tied up shipping to such extent that vessel owners have been unable to make an estimate of the dates upon which they could commence receiving ore. By the close of last week all but one of the unions interested in lake shipping had been placated, and many men were at work on board ship. But the Masters' and Pilots' Association is still in the air. This union has made demands that, if granted, could not fail to bring about a strike of the engineers, in addition to other conditions. The masters want a higher wage scale and a definite term of employment, the scale being based on the size of ships, and commencing with a year's pay of $2250 on the largest ore vessels. But the hub of the contention is their demand that they be actually in charge of their ships from stem to stern, and to this the engineers, who have been responsible for a few years to owners direct, have made strenuous objection. The lakes are about open, even the enormous ice fields at the western end of Superior presenting little hindrance to navigation. Until a settlement is made with the Masters' and Pilots' Association the shipping will be tied up.

### Mines Closing Instead of Opening.

Having been forced to stockpile ore for a longer time than customary, many mines are about to close. Some have already done so, and these must remain idle until enough shipping is done to give them room. This does not add to the comfort of the situation. Then, again, the agreed price of ore is such as to make non-Bessemer mining scarcely worth while, and even some standard Bessemer mines are unable to make any money. A mine or two have closed on this account, and preparations for resumption at Mesaba non-Bessemer properties are not at all strenuous. If standard Mesaba Bessemer is selling at Cleveland at $3, or even a little less, as is reported on good authority, this means about $1 a ton at the mine, above royalty, and is, of course, even less for non-Bessemers. It is an especially desirable and easily mined non-Bessemer that can be sold under such circumstances. But, of course, such conditions cannot endure.

The Chandler and Pioneer mines of the Oliver Iron Mining Company, Vermillion range, have not resumed, and doubtless will not for some weeks at the earliest. They were closed by the men, who attempted to force the resignation of Superintendent Charles Trezona. The Zenith, Sibley and Savoy, all the remaining active mines on the range, are closed because of a lack of room from stocking ore, and the district is now exceedingly quiet.

There have been within the week a few closures of mines on older ranges, for reasons given above, but these have little effect upon the general situation. As soon as shipments are general some of these idle mines will resume. There is a great addition to activity on the Mesaba range, both in mining and in stripping operations. All the stripping contractors who have been idle during the winter have resumed work within the past week or so, and are employing many hundred men. The mining companies that had closed their properties last fall have been reopening and preparing for hoisting and steam shovel work, and much ore is coming to surface all along the range. Conditions for the summer look better there than anywhere else in the lake region.

### Affairs at the Sault.

It is understood that the first work to be undertaken by the reorganized Clergue companies at Sault Ste. Marie, Ont., will be the mining of iron ore at the Helen, Michipicoten range, and of nickel at Sudbury. These mines are expected to be in operation soon after June 1. While speaking of this reorganization it is well to say that to Mr. Clergue should be given the highest praise possible to be bestowed for the successful carrying through of the negotiations that have resulted in the rehabilitation of these enterprises. It was a task that seemed insurmountable and before which the most eminent financiers fell. It is probably true that no man but Mr. Clergue could have carried these negotiations to success, as it is certainly true that no other man did do so. It is understood that most of the Philadelphians who were associated with the former company have sold out, realizing, of course, a very large loss.

### The Baraboo Ore Field.

E. J. Longyear, who has been carrying on extensive exploratory operations in the Baraboo field for some time, is of the opinion that the district will yield a very large tonnage of ore running from 50 to 55 per cent. iron, and that it is therefore destined to be an important factor. He finds drilling there fully as difficult as in other districts, and as hard upon carbons as in the taconites of the Mesaba, for the rocks immediately associated with ore in the Baraboo region present all possible gradations of dolomite, hematite, quartz and some softer minerals, and the jasper is badly broken. Underground explorations seem to show that the conditions prevailing at the Illinois mine, of the International Harvester Company, are general throughout the Baraboo Valley wherever erosion has not taken off the iron formation and overlying rocks. Speaking generally, there seems to be a horizon highly ferruginous near the base of the dolomite, this horizon varying in thickness up to perhaps 500 feet. In it are one or more deposits of iron ore, separated by a stratified associated rock. In the Iroquois mine of Rogers, Brown & Co., which was drowned out two months ago, they have conquered the water and are at work. They propose to raise into the overlying sandstone, let its water down and drain the whole body, which will avert trouble, both as to water and as to the drainage of the ore itself. Shipments are now going forward regularly from the Illinois mine to Chicago.

### The Mesaba Range.

There is far more exploration on the Mesaba range this spring than one might, at first thought, think the ore market warranted. As closely as I can estimate there are 50 drills at work between T. 58-15 and 56-22. Of these, 26 are under the supervision of one firm. The number of diamond drills is much less, though some six are working on the Vermillion. Explorations are practically at a standstill on all the older ranges about Lake Superior. They continue, however, to some little extent in Ontario, west of Lake Superior, though most of the work that was under way there through the winter has ceased. On the Mesaba an excellent find of good ore has been made in section 3, 58-15, where the Longyear Mesaba Land Company have five drills at work. The geological indications at that part of the range seem to indicate that a tongue of granite runs off to the south of east from the intrusion of granite that cuts into the ore bearing formation from the west in section 33, same town. This ore lies to the south and very close to a ledge of granite that comes almost to the surface, while due north, two miles away, is the large Stephens mine of the Oliver Company. Since the discovery of this rock in that place an examination has been made of the cores from drill holes in the central parts of sections 4, 58-15, and 33 and 34, 59-15, and it has been found that some of these holes were bottomed in what is now seen to be a feldspathic granitic rock. These facts have their important bearing on drill work that has been done in various localities of the Mesaba. Another interesting fact has just been shown, through deep drilling in a tract belonging to the United States Steel Corporation, not far from Hibbing, where a second enrichment of ore has been found at least 100 feet under the bottom of the large ore body existing above it. This also is important, and should have quite an effect on explorations in some portions of that range.

Two shafts are being sunk on the Western Mesaba in deposits of the same sandy ore that was experimented upon by the Standard Mining Company (W. P. Snyder & Co.) last year. It is now thought that the washing of these ores can be effected with less expense than then seemed necessary, and some important developments are liable to take place this year in that district. Of this I shall have more to say shortly. D. E. W.

## Mechanical Features of the Eldredge Automobile.

The motive elements of the present form of the Eldredge gasoline car, as manufactured by the National Sewing Machine Company, Belvidere, Ill., are of some interest, as they show the developments resulting from experiments covering a number of years. The car itself embraces a number of new features, but it is more in connection with the mechanism that the present article will be concerned. The motor is of the four-cylinder horizontal type with the cylinders in opposed pairs and the explosions occurring successively at each quarter revolution of the shaft. It is rated at 12 horse-power, and is mounted near the rear end of the frame, the fly wheel being under the center of the car. The clutch is on the right hand end of the crank shaft, while the transmission gearing is in a separate casing under the foot board. In the transmission system sliding gears are employed, giving three forward speeds and two reverse, the highest speed forward being obtained by direct drive without the use of the gears. Power is transmitted to the differential on the rear axle by a chain located centrally.

The motor is shown in Fig. 1. It runs at a comparatively slow speed, this being ordinarily about 600 revolutions per minute, but may be varied from 100 to about 1800 revolutions per minute. The ordinary variation is from 250 to 800 revolutions, the former corresponding to 4 horse-power and the latter to 12. The cylinders are 3¾ inches in diameter, and the stroke is 4 inches. The heads are removable and screw against a taper shoulder to provide a tight fit. Removing the heads allows the pistons to be withdrawn by disconnecting the connecting rods. Both the piston heads and the cylinder heads are cast with an internal concavity, giving an approximately spherical explosion chamber. The rods of each opposed pair of pistons are connected to the same cranks and the latter are set quartering, so that the machine is self starting from any position. The two cylinders on each side of the shaft are cast in one piece, which contains the valve and ignition chambers. The crank case is in two parts, which are bolted together and entirely inclose it. The inlet and exhaust valves are opposite each other at the top of the cylinders, the exhaust valves being on the crank side of the chamber. The spark plugs are kept clean by being placed with their points projecting between the valves in the path of the inrushing fresh charge. The admission valves are of the poppet type operating by section, all four being simultaneously throttled by a single controller. Cams on the timing shaft actuate the valves through sliding arms.

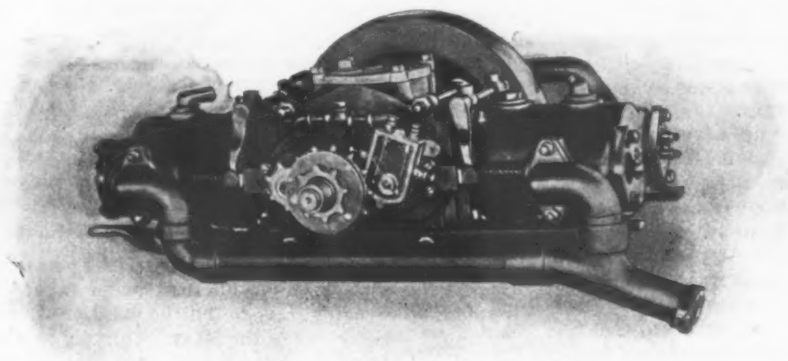


Fig. 1.—The New Motor of the Eldredge Automobile.

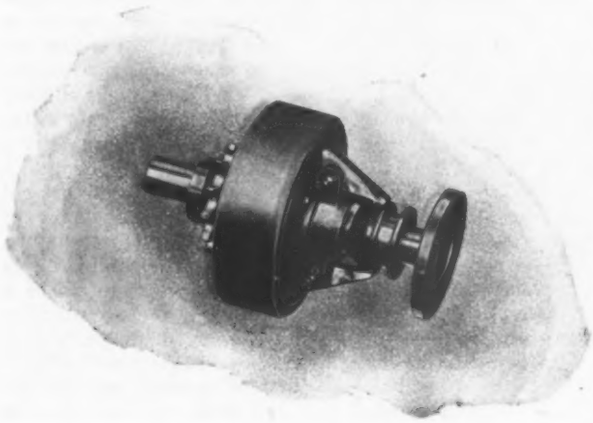


Fig. 2.—The Clutch.

The spark timing shaft is mounted above and parallel to the crank shaft, and carries a four-lobed cam, which closes the make and break sparking mechanism four times for each revolution. For advancing or retarding the time of ignition in the cylinders, the contact points are rotatably mounted. A single spark coil is used in connection with a commutator for sending current to the several cylinders in order. The commutator consists of a fiber disk secured to the side of the crank case, in the outer face of which are two concentric grooves, one containing a copper ring and the other four separated quadrants. The solid ring connects with the positive wire

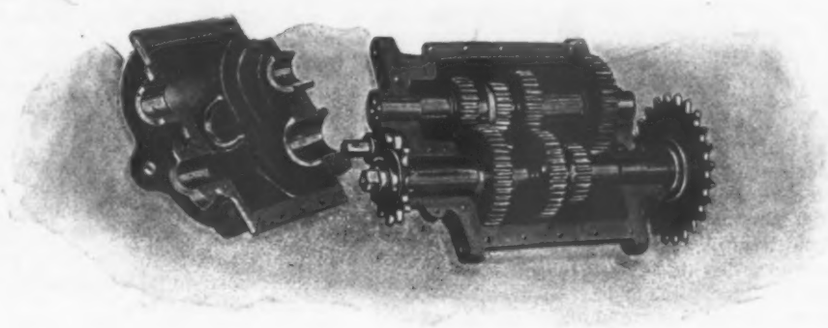


Fig. 3.—The Transmission Gearing with Cover Removed.

from the secondary coil, and the segments are connected to the four plugs. The ignition in each cylinder occurs on alternate strokes, to provide which the shaft carrying the brushes is driven through a two to one gear from the crank shaft.

A view of the clutch is shown in Fig. 2. It is mounted on the right hand end of the crank shaft, the position usually occupied by the planetary system, and is of novel construction. One end carries a cup shaped member, having its opening facing toward the motor, to which is attached the sprocket which drives the transmission system. Two broad flat rings are slidably keyed to the inner face of the cup, and between these are three similar rings feathered to the motor shaft. Fiber sheets or rings are interposed between the contact faces. A steel plate closes the opening of the cup and connects with the clutch fingers, which bring pressure to bear against the plate when forced inwardly by a cone on the motor shaft. The cone is moved by a yoke operated by a foot pedal in the floor of the car. Pressure against the clutch plate causes the friction rings to be forced into contact, so that the motion is gradually taken up, allowing the car to be started from rest even on the high speed direct drive gear. The long arm of the bell crank that moves the clutch cone carries a brake shoe, which bears against the outside of the cup casing when the clutch is released. In addition, there is an emergency brake mounted on the right hand of the rear axle, which is operated by a second foot pedal.

The transmission gearing, shown in Fig. 3 with cover removed, is placed in front of the motor under the seat. It is driven from the clutch by a chain running on a sprocket at the right end of the main gear shaft, and transmits power from the sprocket on the left end to the differential on the rear axle. It accomplishes its changes of speed by two sliding shafts, one above and the other below the gear shafts. One of these carries an intermediate gear for the reverse and the other a yoke for moving the sliding gears on the second gear shaft. Separate hand levers in front of the middle of the seat move the sliding shafts. The reversing gear can be engaged with either the low or intermediate speed gears to give the two backing speeds. With the motor running at 600 revolutions per minute and the highest forward speed gear in action, the car is capable of a speed of about 24 miles an hour.

## The Efficiency of the Battle Ship.

WASHINGTON, D. C., May 7, 1904.—On the eve of the adjournment of the session of Congress just closed there was a highly significant exchange of views on the part of Senator Hale, chairman of the Naval Committee, Senator Allison, chairman of the Committee on Appropriations, and other prominent Senators with regard to the advisability of continuing the present policy of spending large sums of money for the construction of battle ships. The discussion was based upon the lessons taught by the recent naval battles in the Russo-Japanese war, in which the vulnerability of the battle ship is regarded by some experts as having been demonstrated to such a degree as to bring their efficiency for any purpose into serious question.

### May [Not] Build the Battle Ship Authorized.

The most important immediate result that may follow this discussion in the Senate is a decision on the part of the Secretary of the Navy not to execute the provision of the Naval Appropriation bill, which became a law on the last day of the session, that authorized the construction of one first-class battle ship as a part of the programme for the increase of the navy. The act also authorized the building of two first-class armored cruisers, not to exceed 14,500 tons; three scout cruisers of not more than 3750 tons, and two colliers to carry 5000 tons of coal each. The administrative provisions of this section of the appropriation act were changed several times during the consideration of the bill, and, as finally adopted, are of special interest to shipbuilders and sub-contractors. It is provided that the colliers shall be built in navy yards, one on the Pacific and the other on the Atlantic coast, as designated by the Secretary of the Navy. Concerning the other vessels, the act provides as follows:

> And in the construction of all of said vessels the provisions of the act of August 3, 1886, entitled "An Act to Increase the Naval Establishment," as to materials for said vessels . . . shall be observed and followed, . . . and in all their parts shall be of domestic manufacture; and the steel material shall be of domestic manufacture, . . . and not more than two of the vessels provided for in this act shall be built by one contracting party; *Provided*, That the Secretary of the Navy may build any or all of the vessels herein authorized in such navy yards as he may designate, . . . should it reasonably appear that the persons . . . bidding for the construction of any of said vessels have entered into any combination. . . .
>
> The Secretary of the Navy is hereby authorized, in his discretion, to contract for or purchase subsurface or submarine torpedo boats in the aggregate of, but not exceeding, $850,000: *Provided*, That prior to said purchase or contract for said boats any American inventor or owner of a subsurface or submarine torpedo boat may give reasonable notice and have his, her or its subsurface or submarine torpedo boat tested. . . .

### Lessons of the War in the Orient.

It was while the conference report upon the above provisions of the bill was under debate in the Senate that Senator Hale raised the question which is now before the Secretary of the Navy. In reply to a question by Senator Spooner, Senator Hale said that the language of the provision regarding the construction of the battle ship appropriated for was permissive, and not mandatory, and that the President and the Secretary of the Navy could refrain from building the vessels if in their judgment it should appear unwise to do so. Senator Bacon of Georgia reminded the Senate that when the naval bill was first taken up for consideration he had ventured to suggest that the improvements in submarine offensive weapons were such that it would probably be a comparatively short time before a battle ship, however well it might be protected against the ordinary projectile, would be out of date and obsolete if not provided with protection against the submarine boat and the submarine torpedo. Senator Stewart of Nevada urged that the Senate make it entirely clear that the Secretary of the Navy need not build the battle ship authorized, unless it should seem best after a very careful and exhaustive investigation. Replying to a question by Senator Mallory of Georgia, as to the present practice of the Navy Department in the designing of superimposed turrets, Mr. Hale said that the recent history of the subject showed the fallacy of trusting entirely to a board of officers. He thought there ought to be a larger introduction of the discretion of the Secretary of the Navy in these matters. Referring to the subject of high power naval rifles, Mr. Hale said that practically all the damage that has been inflicted in naval warfare has been that accomplished by 8-inch guns, and that while he did not pretend to be an expert he had given the subject much study, and had reached the very definite conclusion that no gun larger than a 10-inch should be placed on any war vessel. Senator Allison emphasized the fact that the bill gave the President discretion in the matter of constructing a battle ship, and said that he had no doubt it would be wisely exercised. Senator Gorman said that he trusted that "the President will take note of what has been so well said by the distinguished Senator from Maine, the chairman of the Committee on Naval Affairs."

In view of the declarations above quoted, it is regarded among naval experts as improbable that any steps will be taken toward letting the contract for the construction of the battle ship authorized by Congress for some months to come. The officials of the department are studying closely events in the Far East, and are likely to be largely influenced thereby, not only in carrying out the provisions of the appropriation act, but in preparing their recommendations and estimates to be submitted to Congress next December, to be employed as the basis of the next naval appropriation bill. W. L. C.

Joseph Wharton of Philadelphia, who purchased the property and the old machinery of the New Jersey Iron Mining Company in New Jersey, as stated in these columns last week, paid $25,300, and not over $1,500,000, as reported in the daily press.

A number of officials of the American Steel & Wire Company were in Pittsburgh last week and visited the company's plants in the Pittsburgh district.

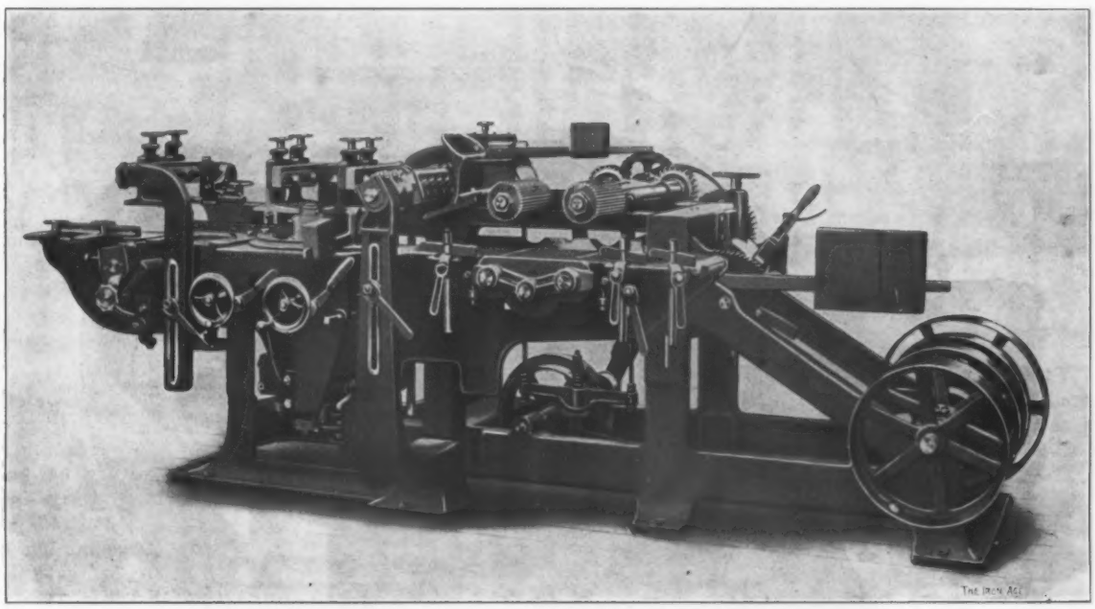
## The New Smith Ten-Inch Outside Molding Machine.

Among the wood working machines exhibited by the H. B. Smith Machine Company, Smithville, N. J., at the St. Louis Exposition, one of most recent design is an improved 10-inch outside molding machine, an illustration of which accompanies this article. The frame of this molder is massive and wide and is cast in one piece. It is so proportioned as to avoid inherent strains, and therefore is much more rigid than frames, which are bolted togther. Provision is made for long and de belts, and the belt which drives the upper or main cutter spindle is provided with a belt tightener which will enable the operator to run a tight belt when the machine is performing hard service and to release the belt from unnecessary strain when doing the ordinary light class of work.

There are four 5-inch feed rolls, all of which are positively driven by expansive gearing. The upper rolls yield for varying depth of cut and irregularity of material, and are set at a slight angle, so as to draw the material to the fence side of the machine. The under cutter head may be connected by pieces of wood. There are three sets, and any of them can be set at an angle to accommodate themselves to the shape of the material passing under them. The pressure bar immediately over the under cutter is provided with an outside support clamped to the table, which may be removed when not wanted. The table, which extends beyond the under cutter head, has adjustment for aligning with the cutter head, and may be dropped down out of the way for sharpening the cutters on this head.

The nuts which clamp the spring posts and the various clamps and bolts connected with the table have wrenches attached. The outside bearing is bolted to the lower framing and is also provided with a vertical adjustment. The bearing at the top is removable to allow changing heads when necessary. The feed rolls are weighted with a spring intervening between the weighted lever and rolls. Lifting the weighted lever up lifts the rolls when withdrawing material, and a small prop holds the weighted lever in position.

There are four rates of feed, 18, 26, 35, and 47 feet a minute, and the feed may be instantly applied or stopped



THE NEW SMITH 10-INCH OUTSIDE MOLDING MACHINE.

rolls are adjustable in a substantial manner, so as to align perfectly with the table, and are also driven by expansive gearing.

The table clamps in three places to the frame, so that when adjusted and properly clamped the machine is quite as rigid as an inside molder. It lowers 12 inches to accommodate the deeper class of work. The cutter spindles are all made of high carbon steel. The main spindle is 2 inches in diameter and 1¾ inches where it receives the head, and the outside bearing is 1½ inches. The under cutter head spindles are 1¾ inches in diameter. The side or vertical spindles are 1¾ inches in the bearings and 1½ inches within the heads. The inside vertical spindle is attached to the table, and therefore moves up and down with it. The outside vertical spindle is provided with a weighted chip breaker. Both of these vertical spindles are adjustable from the front side of the machine and clamped from the front. The inside vertical spindle has an additional clamp at the bottom, so as to make it very rigid. The spindles have lateral, vertical and angular adjustments, and the under cutter head, as well as the upper or main cutter head, have horizontal adjustments, hence the machine has every necessary adjustment for doing all classes of work ever done on large outside molding machines.

The chip breaker in front of the upper cutter head has an adjustment to and from the cutters, and may be lifted and shoved to one side to give access to the cutters for sharpening. The pressure bars which follow the upper by a lever and ratchet seen at the feeding end of the machine. The machine weighs 5600 pounds, and occupies a floor space of 11 feet by 6 feet 6 inches.

## The Foundry Exhibit at the St. Louis Exposition.

It seems to be the consensus of opinion among those who have seen the mining and metallurgical exhibits at the World's Fair at St. Louis that they will far surpass those of any previous exposition, both in their extent and practical character. We are glad to find that among these exhibits those representing the foundry interests are to be well represented. A foundry building of steel frame is now being constructed in which the foundry exhibits are to be installed in time for the meeting of the American Foundrymen's Association in June. The lateness in the opening of the foundry building will not be considered a serious drawback in view of the fact that all great expositions have been late in opening and their attendance is always light during the first two months after the opening date. Using the Chicago and Paris exposition experience as a basis, the St. Louis authorities expect over 20,000,000 admissions at their gates between July 1 and December 1. During that time the exposition foundry headquarters will doubtless be largely visited, both by foundrymen and by the general public.

## The Burger Automatic Gas Engine.

So far as is known the Burger automatic gas engine, built by the Woolley Foundry & Machine Works, Anderson, Ind., is the only gas engine which operates on the same principle as the automatic steam engine. That is to say, it is the only engine that cuts off its charge at a variable point in the stroke to correspond with the load on the engine. There are obvious advantages accruing from an arrangement of this sort. It is well known that an automatic steam engine uses from 50 to 60 per cent. less steam than the old style throttling engine; hence it is reasonable to expect that the claim for the automatic gas engine that it will use from 40 to 60 per cent. less fuel than the throttling gas engine is well founded. In the Burger automatic engine the governor admits to the cylinder only as much gas and air as the load requires, and no attempt is made to regulate by altering the proportion of the mixture after the usual gas engine practice. In addition to the claim of economy in fuel on either light or heavy loads, strong points are made for its excellent regulation, simple construction and ease of starting, which will be brought out in the following description:

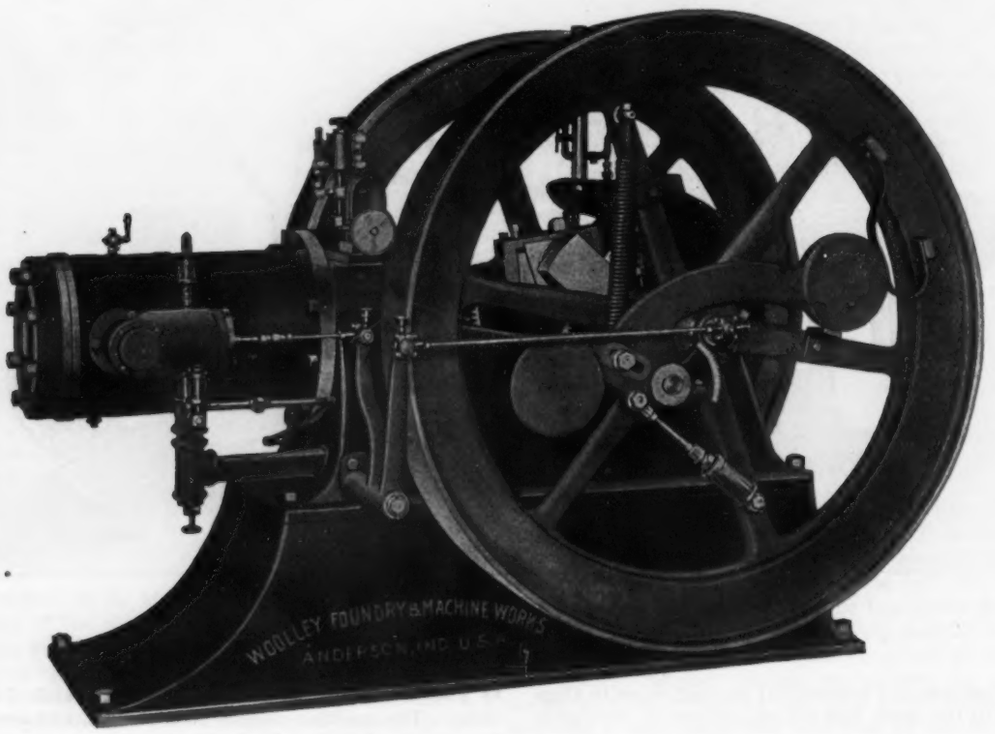



Fig. 1.—The Burger Automatic Engine for Gas or Gasoline.

Fig. 1 is a general view of what may be termed the front of the engine, showing the inlet valve, the governor mechanism and the attachment of the magneto for supplying current to the ignition apparatus. The small number of working parts is a characteristic that is brought out in this illustration, and will be better appreciated with a further reading. Other things being equal, the fewer the number of working parts the less the complication and the better the machine. In commercial use the fact that simplicity tends to reducing the liability of frequent repairs is an important consideration.

A number of features in the construction are distinctive. The bed is of the box type, which requires no ribbing and insures rigidity in the bearings. The latter are bored square with the end, which is faced to receive the cylinder, and once and for all determines a perfect alignment. Fig. 2 brings out other points in the construction and shows the method of attaching the cylinder. It will be seen that a projecting sleeve from the cylinder casting extends into the bore of the bed, and has two faced rings making contact with it to secure stiffness. In this way the studs which secure the flange of the cylinder casting to the bed are relieved from twisting strain and subjected only to tension. There are ten of these bolts, any two of which are sufficient to withstand the force of the explosions. This method of overhanging the cylinder is an improvement over the construction in which the cylinder is bolted to the top of the bed, inasmuch as it is not subjected to strain produced by expansion and contraction stresses. The engine is mounted on an iron subbase, which gives it an attractive appearance. The igniter has a removable plug in communication with the upper part of the cylinder just above the exhaust valve. This being the point where the richest gases locate, it affords the best ignition. The seat of the plug is at its inner end, which being the only part exposed to the fire keeps the body cool. The current for the igniter is furnished by a magneto driven from the fly wheel by a leather friction wheel. Batteries are also furnished for starting and from which the engine may be run if desired.

The governor is of the Rite's inertia type, using a single weight. Its wide adoption on automatic steam engines is a proof of its desirability, but this is believed to be the first gas engine on which it has been applied. It is of a modified form, and incorporates some Burger improvements. In Fig. 1 the nature of its action may be seen. The weighted arm being deflected by inertia backward or forward as the speed increases or decreases causes the segment gear mounted on its pivot to rotate a pinion concentric with the crank shaft. This pinion carries a wrist pin, which imparts a reciprocating motion to the inlet valve, and being rotated with respect to the crank changes the point of cut off of the valve. The piston is of the trunk pattern, and of extra length to avoid wearing the cylinder more in the center than at the ends. The crank shaft is forged from a solid billet of steel, and runs in long bearings, which are provided with automatic means for lubricating. The connecting rod is of the box type, in which the bearings are adjusted by wedges. This makes it unnecessary to remove the piston when the cross head bearing requires adjusting. The fly wheels are heavy and turned with a crowned face, so that a belt may be run on either, but a pulley of suitable diameter is usually furnished, which is bolted to the spokes.

The construction of the inlet valve is seen in Fig. 2. It includes a cylindrical valve operated by the governor, which has ports corresponding with openings in the case. The two sets of ports to the right (there are four independent ports to each set) afford the air passages, and the third port, the one on the left, provides the gas passage. The inlet valve protrudes into the cylinder and carries

the gas valve on the outer end of its stem. This part is actuated entirely by suction. As the pistion recedes from the head end the inlet valve opens, carrying with it the gas valve, which permits the gas to pass from the outer to the inner chamber, thence through the ports in the cylindrical valve into the cylinder. The amount of air and gas which passes through the ports is determined by the length of time the ports are open. If the engine is running under quarter load the governor will close the ports approximately when the piston has traveled one-quarter of its stroke; if under one-half load the port remains open until the piston has traveled half its stroke, or if under full load the piston will make its entire suction stroke during the time the ports are open. When the load is suddenly decreased the governor will act instantly, cutting down the time that the ports are open to one-eighth or even one-sixteenth of the length of the piston stroke. Or should the load be suddenly thrown on the governor will as quickly adjust itself to hold the ports open for the entire stroke. The engine may be equipped to use gasoline instead of gas, in which case a modification is made in the inlet valve, so that the gasoline is vaporized in the inner gas chamber.

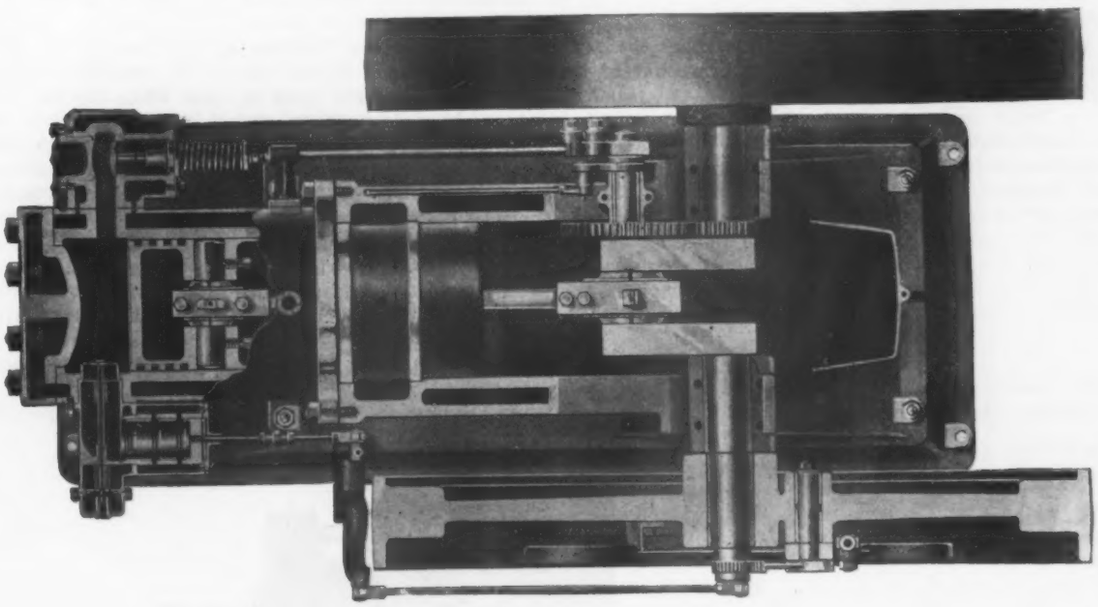


Fig. 2.—Sectional Plan of the Burger Automatic Engine.

The action of the exhaust valve is also best seen in Fig. 2. Its construction is simple, and the action of the mechanism is almost self explanatory. The valve is of the poppet type and is opened by a cam directly in line with the valve stem, so that it is prevented from wearing out of center to its seat. The two-to-one gear which drives the shaft carrying the exhaust cam also carries the igniter cam, the igniter being, as before stated, just over the exhaust valve. To take out the exhaust valve it is only necessary to remove the head of the valve case, which, like the igniter, is seated at its inner end. This valve case is provided with a water jacket, as is also the cylinder and cylinder head, to prevent damage resulting from the high temperature of the burning and burned gases.

It is interesting to add a word in connection with the indicator cards which this engine gives. They are unlike those given by the ordinary gas engine and have a more striking similarity to those obtained from the ordinary steam engine, the various points being quite as prominently marked. The cards indicate a fact which would naturally be expected from the nature of the mechanism—namely, that there is not the amount of lost work which obtains in the ordinary engine running without cutting off. In the throttling type of gas engine the air is drawn in during the whole stroke, and a certain percentage above that necessary for complete combustion must be compressed with the effective portion. In the Burger automatic engine, on the other hand, since the governor only admits to the cylinder as much gas and air as the load requires, part of the stroke when the engine is not running at full load produces a partial vacuum. This work is given back to the piston on the return of its stroke until atmospheric pressure again exists within the cylinder. From there on the compression is only that amount necessary to bring the charge up to the regular initial pressure.

The Woolley Foundry & Machine Works also build a gas and gasoline engine which operates with the familiar "hit-and-miss" principle of governing. Fig. 3 shows the gasoline and air valve used on an engine of the latter type. The liquid is injected in the air space under pressure from a pump attached to the engine bed and operated by the engine, and is heated by the cylinder wall as it enters directly in front of the receiving valve. By this construction every particle of the liquid is vaporized and there is no chance for leakage, as is the case where valve

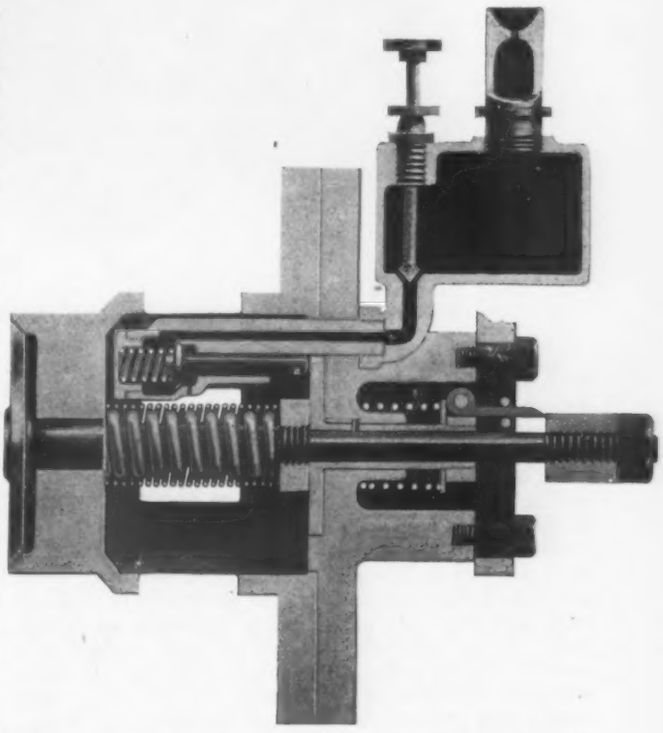


Fig. 3.—Gasoline and Air Valve Used on the Burger Hit-and Miss Engine.

boxes and similar devices are used. On the suction stroke of the piston the tool steel sleeve on the outer end of the air valve stem engages with a finger connecting with the gasoline valve, causing it to open. After the engine has attained its normal speed the governor actuates a slide bar withdrawing the finger from the collar, and permitting the gasoline valve to remain closed until the governor returns the finger to again engage with the sleeve. The charge of air and gas admitted to the cylinder always remains the same, and the frequency of the impulses varies with the load.

The gasoline is preferably stored in a tank outside of the building and buried underground. All surplus gasoline is delivered back to the tank. On account of the greater inflammability of gasoline, when the latter is used a lower compression must be employed than has been found most economical where gas is used. All types of engines are furnished, when so desired, with an automatic starting device, including a steel air tank and a system of valves so arranged that during its compression strokes the engine will pump air into the tank until a certain amount and pressure are obtained. This stored up compressed air may be used to start the engine after a subsequent period of rest.

**The American Smelting Steamship Company's Line to Mexico.**—The American Smelting & Refining Company have increased their steamer service from New York to Mexico from two ships to five. The Smelting & Refining Company established the American Smelting Steamship Company about 18 months ago and chartered two steamers of 5000 tons capacity, which have since been operating, making trips from New York every 20 days. The success of the line has been such that they have replaced the two steamers with five ships of 6200 tons each, and the company will now go into a general carrying business. Their principal freight tonnage from the North will be coal and coke, and this class of freight is increasing so rapidly that it is not improbable that one or more steamers will soon have to be added. The steamers on the way south will stop at Norfolk and at Tampico, Mexico, but on their return they will stop at Progreso, Matanzas and Sagua, Havana, Norfolk, Philadelphia and Perth Amboy. On the return trip the principal freight will be lumber, sugar, sisal, matte and bullion. The steamers will hereafter run once a week.

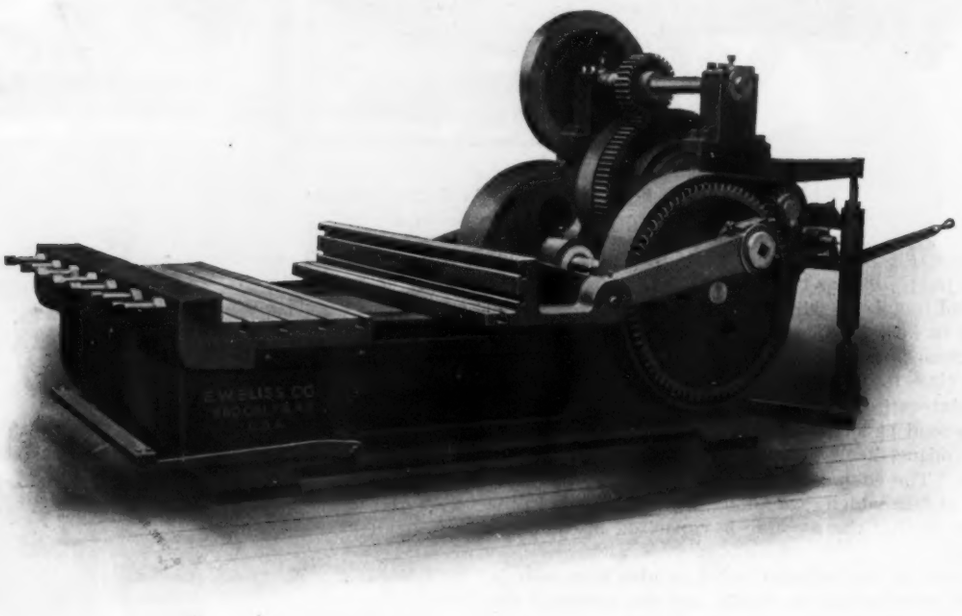
**The Calumet Machine & Engineering Company announce the removal of their Chicago offices from 1763 Monadnock Building to 1422 Marquette Building.**

## New Bliss Forming and Bending Press.

The accompanying half-tone illustrates a horizontal double crank press recently designed by the E. W. Bliss Company, Brooklyn, N. Y., for use in the manufacture of agricultural implements, wagons, automobiles, car trucks, &c. It is for the purpose of doing all kinds of forming and bending, either hot or cold, involved in the making of these and kindred products. Although in appearance quite similar to the so-called "bulldozer," it possesses several distinct features not heretofore employed in such machines.

In most cases the bending and forming of the iron parts of wagon bodies, automobile chassis, cultivators, potato diggers, &c., must be done while the iron is hot. In making deep bends, should the speed of the crosshead be too great, the parts of the work which are not encompassed by the dies would be distorted by their own momentum. In order to obtain the speed and length of stroke best suited to each individual piece of work this machine is provided with three different lengths of stroke and four variations of speed, as noted later.

The machine is provided with a powerful patented friction clutch, which may be operated automatically, so that the die slide will always stop in a position farthest away from the die bed, or it may be set to be operated by hand, in which case the operator may start or stop the machine at any part of the stroke, which permits of what are known as "coaxing" operations. These are frequently needed for complicated bends, and the change from one method to another is very easily and quickly effected. As now built, two fly wheels are employed, instead of one, as shown in the illustration.



THE BLISS HORIZONTAL DOUBLE CRANK FORMING AND BENDING PRESS No. 5.

The general dimensions are: Weight, 25,000 pounds; diameter of fly wheel, 32 inches; width, 4 inches; weight of fly wheel, 600 pounds; width of slide and bed, right and left, 72 inches; stroke of slide, 14, 16 and 20 inches; number of strokes per minute, 6, 12, 18 and 25; total hight, 84 inches; floor space over all, front and back by right and left, 150 x 70 inches.

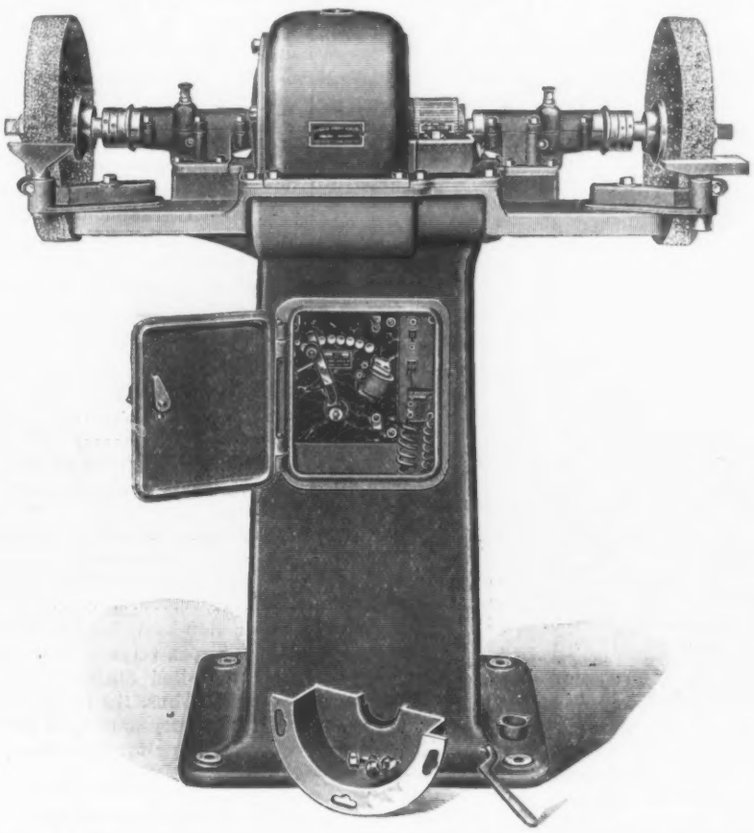
**William H. Creahan, formerly superintendent of the tube mill of the Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, has resigned to accept the position of night superintendent of the Pennsylvania works of the National Tube Company, Pittsburgh.**

**The American Steel & Wire Company exported last month 4172 tons of wire products, against 3748 tons in March.**

## The Bridgeport Electric Grinder.

One of the simplest ways for providing dry grinders and buffing lathes with electric drive is to mount the wheels directly on a motor shaft, but the arrangement is one that answers the purpose only when the work is of a light nature. Where heavy work is to be done the strain induced on the bearings is more than a motor of standard design can be expected to withstand. In such cases it has been customary to mount the motor on an extended base on one end of the machine. This arrangement fulfills the requirements, but very often occupies more space than is desirable. With a view to an improvement in this respect, the Bridgeport Safety Emery Wheel Company, Bridgeport, Conn., and the Crocker-Wheeler Company, Ampere, N. J., collaborated in the design of a line of motor driven machines of this class, an example of which is given in the accompanying illustration.

The emery wheel builders supply all of the machine up to and including the spindle, and the motor builders mount the armature on the spindle and add the field coils and inclosing magnet frame. The shaft is larger and stronger than is supplied with the ordinary motor, and is supported by unusually long bearings to secure rigidity against the vibrations to which these tools are subject. It will be noticed that in the design of the motor slight modifications occur to make it with the machine a harmonious unit.



A BRIDGEPORT DRY GRINDER DRIVEN BY A CROCKER-WHEELER MOTOR OF SPECIAL DESIGN.

It was necessary, of course, to have the motor fully inclosed, which introduced the serious problem of ventilating. In the present instance this has been solved by making the lower half of the motor open directly into the base casting. Thus the air contained within the base is added to the quantity circulating around inside of the motor, increasing it from five to eight times, so that the motor will run with much less heating than attends the ordinary fully inclosed motor of the same size and capacity. The base also gives an increased surface from which to radiate the heat.

The commutator and brushes are covered with an end shield split horizontally. The lower half contains the brush holders and wire connections, and the upper half is attached to the motor frame by cap screws. The latter is, therefore, readily removable to give easy access to the armature and brushes. In the illustration it is shown removed, and may be seen lying on the floor in front of the machine.

Ring oiling bearings are provided, and on the outer end of each box is a dust proof collar held in place by a ring with two ring nuts, one to lock the other. By adjusting these collars, all end wear and thrust of the spindle may be taken up. In all senses the machine is self contained, the wires and connections being inside, consequently accidental short circuits are avoided. The starting box and switch are inside the base, and may be manipulated by the operator through the door opening at the front of the base.

## Pig Iron Warrants to Be Dealt in at Pittsburgh.

At a meeting of the Board of Directors of the Pittsburgh Stock Exchange, held last week, it was practically agreed to list the pig iron warrants of the American Pig Iron Warrant Association. Some changes in the proposed plan for dealing in these warrants were suggested which met the approval of the Committee on Securities, and the latter will recommend the listing of the warrants this week. By the middle of the month it is expected that all arrangements will have been completed and dealings will be in order. Howard M. Hooker, one of the new members of the exchange, has been active in the matter, and aided the directors in forming a decision and in working out details, Mr. Hooker being a member of H. M. Hooker & Co., Incorporated, iron and steel brokers.

In the trading on the exchange each warrant will represent 100 tons, and the warrants will be classified as follows: A, Southern coke iron; B, Northern coke iron; C, Virginia coke iron; D, standard Bessemer iron; E, Southern charcoal iron; F, Northern charcoal iron. Classes A, B and C shall be divided into grades known as No. 1 foundry, No. 2 foundry, No. 3 foundry and gray forge, if graded by fracture; or No. 1, No. 2, No. 3 and No. 4, if graded by analysis. The basis for such analysis shall be the standard adopted by the American Society for Testing Materials in 1904. Class D shall be deliverable by analysis only. Classes E and F shall be deliverable by fracture or analysis. The commission for buying or selling warrants will be 6¼ cents a ton.

# Census of Mines and Mining in 1902.

## Total Value of Output Doubled Since Previous Census.

WASHINGTON, D. C., May 10, 1904.—The Director of the Census has completed the compiliation of the schedules of the mining industry for the Twelfth Census. He has added thereto a brief comparative statement concerning the various classes of mines and quarries, together with certain technical details regarding the development of the different branches of the industry. This report, which is designed to be preliminary to a much more elaborate detailed statement to be issued hereafter, presents the statistics for all mines and quarries and petroleum and natural gas wells that were in operation during any portion of the calendar year ending December 31, 1902. The statistics are confined to the operations at the mine, quarry or well and such manufacturing as was incidental to and carried on in immediate connection therewith. Special care has been taken to avoid the duplication of data heretofore published in the annual reports of the United States Geological Survey, the census figures being designed to show the condition of each branch of the industry from a purely commercial standpoint, presenting the number of mines and operators, the number and earnings of all employees, the cost of supplies and materials, the value of products, &c.

The difference in the extent to which the manufacturing processes have been included in the statistics of prior censuses interfered with the comparability of the results, and in the case of certain classes of mines no details have been compiled in preceding censuses; nevertheless, it has been found parcticable to present the following statement showing the value of the products of the mining industry for the year 1902, as compared with 1889:

| Mineral. | 1902. | 1889. |
|---|---|---|
| Antimony | Not reported | $28,000 |
| Asbestos | $46,200 | 1,800 |
| Asphaltum and bituminous rock | 236,728 | 171,537 |
| Barytes | 203,154 | 106,312 |
| Bauxite | 128,206 | 97,335 |
| Borax | 2,383,614 | 500,000 |
| Buhrstones and millstones | 59,808 | 35,155 |
| Cement | 24,268,338 | 5,000,000 |
| Clay | 2,061,072 | 635,578 |
| Coal, anthracite | 76,173,586 | 65,879,514 |
| Coal, bituminous | 290,858,483 | 94,346,809 |
| Copper | 71,192,014 | 26,907,809 |
| Corundum and emery | 104,605 | 105,565 |
| Crystalline quartz | 43,085 | Not reported |
| Feldspar | 250,424 | 39,370 |
| Flint | 144,209 | 49,137 |
| Fluorspar | 275,682 | 45,835 |
| Fuller's earth | 98,144 | Not reported |
| Garnet | 132,820 | Not reported |
| Gold, coining value | 67,018,890 | 32,886,744 |
| Graphite | 227,508 | 72,662 |
| Grindstones and pulpstones | 667,431 | 439,587 |
| Gypsum | 2,089,431 | 764,118 |
| Infusorial earth, tripoli and pumice | 55,994 | 23,372 |
| Iron ore | 65,465,321 | 33,351,978 |
| Lead ore | 18,181,013 | 6,467,137 |
| Lithographic stone | Not reported | 243 |
| Limestones and dolomites | 30,441,801 | 19,095,179 |
| Lithium ore | 25,759 | Not reported |
| Manganese ore | 177,911 | 240,559 |
| Marble | 5,044,182 | 3,488,170 |
| Marl | 12,741 | 63,956 |
| Mica, sheet, scrap and waste | 118,849 | 52,450 |
| Mineral pigments, crude | 360,885 | 483,766 |
| Monazite | 64,160 | Not reported |
| Natural gas | 20,867,863 | 21,097,099 |
| Oilstones, whetstones and scythestones | 113,968 | 32,980 |
| Ozocerite, refined | Not reported | 2,500 |
| Petroleum | 71,397,739 | 26,963,340 |
| Phosphate rock | 4,922,943 | 2,937,776 |
| Platinum and iridium | 1,814 | 2,000 |
| Precious stones | 328,450 | 188,807 |
| Quicksilver | 1,550,090 | 1,190,500 |
| Sandstones and quartzites | 10,601,171 | 12,066,076 |
| Silica sand | 421,289 | Not reported |
| Siliceous crystalline rocks | 18,257,944 | 14,464,095 |
| Silver, coining value | 70,074,625 | 66,396,988 |
| Slate | 5,696,051 | 3,482,513 |
| Sulphur and pyrite | 947,089 | 209,969 |
| Talc and soapstone | 1,138,167 | 475,878 |
| Tungsten | 5,975 | Not reported |
| Uranium and vanadium | 48,125 | Not reported |
| Zinc ore | 9,006,361 | 3,049,799 |
| All other minerals | 49,256 | 73,000 |
| Totals, all minerals | $884,040,869 | $444,012,998 |

Following are some of the details of special interest:

### Copper Ore.

This class embraces all ores whose principal or only value is their copper contents. Copper is also recovered as a by-product of the smelting of ores valued chiefly for their precious metal contents. All statistics relating to the mining of such ores are included in the returns for gold and silver mines. Ore dressing works (stamp mills and concentrating plants) connected with copper mines are included in the returns. Smelters are regarded as manufacturing establishments, and the data for them are not included in the mine returns. At the Eleventh Census concentrating plants in Montana were reported together with smelters, and are therefore omitted from the comparative statement below:

| | 1902. | 1889. |
|---|---|---|
| Number of mines | 144 | Not reported |
| Number of operators | 144 | Not reported |
| Salaried officials, clerks, &c | 1,208 | 70 |
| Salaries | $1,768,456 | $123,236 |
| Wage earners | 26,007 | 9,750 |
| Wages | $21,151,405 | $6,610,781 |
| Contract work | $188,768 | $337,061 |
| Miscellaneous expenses | $1,397,463 | $1,852,753 |
| Cost of supplies and materials | $11,083,175 | $5,638,694 |
| Product: Quantity, short tons | 11,780,064 | 3,322,742 |
| Value | $51,178,036 | Not reported |

The value reported in the above table is the value of the product classed as copper ore, rough or dressed, at the mine. No corresponding value was reported at the Eleventh Census, the value reported for 1889 being that of the fine copper contents of all ores, including those whose chief value was that of their precious metal contents. In order to make the data comparable, the quantity and value of the fine copper contents of all ores mined in each census year are presented in the following statement:

| Year. | Pounds. | Gross value at mine. |
|---|---|---|
| 1902 | 639,033,392 | $71,192,014 |
| 1889 | 231,246,214 | 26,907,809 |

The fine copper contents of all ores mined in 1902, with their sources of production, are shown as follows:

| Class of mine. | Pounds. | Gross value at mine. |
|---|---|---|
| Copper | 625,004,529 | $70,175,810 |
| Gold and silver | 14,028,863 | 1,016,204 |
| Totals | 639,033,392 | 71,192,014 |

The production of refined copper from domestic ores for 1902, based upon returns from copper refineries, is reported by the United States Geological Survey at 659,508,644 pounds. Thus, the copper contents of the mining product of 1902 vary only by 3 per cent. from the product of copper refining for the same year.

### Iron Ore.

Statistics have been published at each census from 1850 to the present, but owing to the different methods of collection and presentation and to the defective character of the data at some of the earlier censuses, the figures for those censuses are not strictly comparable with the later statistics. The comparative statistics for 1889 and 1902, inclusive, are summarized in the following table:

| | 1902. | 1889. |
|---|---|---|
| Number of mines | 525 | 592 |
| Number of operators | 332 | Not reported |
| Salaried officials, clerks, &c | 2,405 | 520 |
| Salaries | $2,113,230 | $529,043 |
| Wage earners | 38,851 | 37,707 |
| Wages | $21,531,792 | $13,880,108 |
| Contract work | $425,292 | $1,578,010 |
| Miscellaneous expenses | $8,257,714 | $3,795,509 |
| Cost of supplies and materials | $9,005,608 | $4,998,988 |
| Product: Quantity, long tons | 35,567,410 | 14,518,041 |
| Value | $65,465,321 | $33,351,978 |

These statistics are for the production of all kinds of iron ore, including not alone ore used in the manufacture of pig iron, but also manganiferous iron ore used in the production of spiegeleisen and the argentiferous manganiferous iron ore used as a flux in the smelting of ore containing precious metals and as a fix in pudding. Of the greater portion of the product reported for Colorado, the precious metal contents alone are not sufficiently valuable to pay for smelting, but the iron and maganese it contains render it especially valuable as a fluxing medium, when mixed with gold and silver ores in the smelter. The sta-

tistics for the production of ochers used in the manufacture of metallic paints are not included here.

**Manganese Ore.**

The statistics include those ores carrying over 44.3 per cent. of metallic manganese. The chief use of manganese is in the manufacture of steel and of chemicals, and it is of value as a flux. At the Eleventh Census the number of mines was not stated, but the product was given as 24,197 long tons, valued at $240,559. The production reported was in Arkansas, California, Georgia, Nevada, North Carolina, South Carolina, Tennessee, Vermont and Virginia. The statistics for the year 1902 make the number of mines 19, and the product 16,477 long tons, valued at $177,911. The preparation usually given the ore at the mine is crushing, washing and screening. There were 68 mines—in Arkansas, California, Georgia, Indian Territory, Maine, Montana, North Carolina, South Carolina, Tennessee, Virginia, West Virginia and Wisconsin—reported idle during 1902, and 3, in Colorado, Utah and Virginia, at which development work was reported.

**Steel Hardening Metals.**

Under the head of steel hardening metals are included metals used or experimented with in the hardening of steel, although some of them are used more generally for other purposes. The metals included in this class are nickel, chromium, tungsten, molybdenum, titanium, uranium and vanadium. The statistics in this report relate to the production of the ore from which these metals are obtained, except that the figures for nickel and cobalt are for the matte at the mines. The mineral classifications, differing from the metallic here given, are chrome ore (chromium), nickel and cobalt (nickel), and rutile (titanium). There is still another metal that naturally comes under this head—namely, manganese; but on account of its comparatively large production it is treated separately. The statistics for these metals during 1902 place the number of mines at 12, with a product of 4444 short tons, valued at $83,717.

Of the 12 mines, four were producing tungsten ores; three, uranium and vanadium ores; one each, chrome ore, molybdenum ore, and rutile; and two, nickel and cobalt ores. Nickel and cobalt ores were concentrated into a matte. Tungsten ores were concentrated more or less. The value of the other ores is the value as mined. One chrome ore mine in California, four tungsten mines in Arizona, Colorado, Nevada and Wisconsin and two uranium and vanadium mines in Colorado were reported idle during 1902. W. L. C.

## Turbines for Scout Ships.

WASHINGTON, D. C., May 10, 1904.—The Bureau of Construction and Repair of the Navy Department has begun the planning of the hulls of the scout ships which are to be fitted with turbine engines. The conditions to be met under the limitations imposed by Congress present a very interesting problem, which necessarily becomes quite complicated in view of the proposed installation of a new and practically untried system of motive power for war ships. The naval experts, however, so far from being disconcerted at the magnitude of the task before them, have decided to add to the experimental character of the work by designing turbine motive power for nearly all the auxiliary machinery of the two vessels. Greater interest is given the plans of the Department by the announcement that in addition to the proposals for the installation of Parsons and Curtis turbines by the Westinghouse and General Electric companies, respectively, the Allis-Chalmers Company propose to submit a turbine of the Parsons type, but with certain important modifications which it is claimed will add materially to its efficiency.

The feature of the task of designing the hulls of the scout ships to which the experts of the Bureau of Construction and Repair are now bending their best energies is the development of the required speed of 24½ or 25 knots in a vessel limited to 4000 tons, but carrying the necessary superstructure to house a large crew, and provide gun platforms for a battery of moderate size. Heretofore naval architects have only been called upon to develop such high speed in connection with vessels of the torpedo boat type, with little or no superstructure, or very large ships of several times the tonnage of the proposed scouts. The plans now under consideration involve the construction of very long, narrow hulls, which, according to the views of some experts, are likely to be found lacking in stiffness and which, it is feared, may prove topheavy when surmounted by the necessary decks and batteries. In spite of these problematical features, the Department officials are interested to find that a number of shipyards are apparently prepared to bid upon almost any plans the Department cares to submit, owing, it is believed, to the general depression throughout the shipbuilding industry. It would not be surprising, however, if when the time comes for letting the contracts an effort should be made on the part of prospective bidders to induce the Secretary of the Navy to provide for the waiving of penalties for failure to make the contract speed, in consideration of a *bona fide* effort to develop it without departing from the limitations fixed by the Department.

The experts of the Bureau of Steam Engineering have begun a special investigation to secure data to be used in designing a complete equipment of turbine auxiliaries for the scout ships, including blowers, bilge pumps, ash hoists, fire service pumps, electric generators for both light and power, steam launches, &c. This is regarded as a highly important as well as an interesting field for experiment, and the data thus far secured indicate that vessels of the size of the proposed scout ships will afford the best possible opportunities for making conclusive tests. No such combination of auxiliaries would be possible on smaller vessels, while on those of greater tonnage the cost would be practically prohibitory. W. L. C.

## Pacific Coast Trade Conditions.

SAN FRANCISCO, Cal., April 30, 1904.—The launching of the "California," the cruiser named after the State, has been one of the most notable events of the year in local manufacturing circles, and, apart from its interest industrially, is also one of importance as showing that the Shipbuilding Corporation fiasco has not affected that industry in our city. The length of the "California" over all is 502 feet; breadth, 69½ feet; draught, 26 feet; displacement, 13,400 tons, and 2000 tons coal bunker capacity. Altogether she will have 72 guns of various caliber. Her belt of steel armor will be from 3½ to 7½ inches in thickness and she has a 4-inch protective deck and 5-inch casement. This is one of the best vessels that the Union Iron Works ever turned out. The Union Iron Works is one of the best pieces of property in the shipbuilding combine, and it is one in the preservation of which all Californians are especially interested.

The weather for the past couple of weeks has been about all that could be desired. We have had fine, sunny days, with occasional rains, the latter just sufficient to supply the moisture necessary for the coming crops. We shall need the rains occasionally for a couple of weeks longer, when the beginning of harvest will be in order. In fact barley has already begun to head out in some parts of the San Joaquin Valley. We shall, without doubt, have a good average crop of both wheat and barley, while the estimates for the fruit crop are far ahead of earlier anticipations. It is now thought by those interested in fruit transportation that the value of the crop this year will not be less than $60,000,000. Of course there is a reverse side to this in that the conditions of the citrus business in Southern California are such that very little is left to the grower at present prices. But, with all, our farming and orchardist community will enjoy a prosperous year and business will be of large volume.

The exports of machinery, hardware, &c., for the past two weeks have been quite large, the total being much larger than usual. The destination of these exports has been principally Japan, which has been buying so largely in the United States in consequence of the war. The shipments of gold here on account of these purchases have been in excess of $26,000,000. The "Korea" and the "Gaelic" have carried an unusual quantity of goods of this class. The former had 1000 tons of steel

rails and the latter 500 tons. The "Korea" had machinery valued at $90,900, of which nearly all was for Japan. The "Gaelic" had shipments of the same description valued at over $45,000. Both vessels had bicycles valued at a trifle over $17,000. Altogether, the shipments of these two steamers aggregated closely in the neighborhood of $200,000 in articles of this description. This beats the record, and there is more of it to come. Japan's needed war supplies will add very largely to the shipments from the port of San Francisco during 1904. As to China, the shipments thither have fallen off almost as phenomenally as those of Japan have increased. As to Port Arthur and Corea, they have been practically wiped out, although the American miners in the northern part of the Hermit Kingdom must obtain supplies by way of this city. J. O. L.

## New Publications.

**The Metallurgy of Steel.** By T. W. Harbord, Consulting Metallurgist to the Indian Government, Royal Indian Engineering College, with a section on The Mechanical Treatment of Steel, by J. W. Hall.

This important work, published as part of the late Sir W. Roberts-Austen's Metallurgical Series, will form an invaluable addition to the library of every steel manufacturer and steel works engineer, while the student will find therein, within reasonable limits, a clear, precise and well written exposition of the principles involved, and detailed descriptions of the processes and machinery used in making steel and working the same into its more important products. The author is eminently fitted for the task which he has so successfully carried through, for although he is, and has been for many years, engaged at the well-known Cooper's Hill Engineering College, he was previously with Messrs. Thomas and Gilchrist, whom he aided in developing and introducing the basic process, so that his point of view is not entirely that of the college professor. He was well advised in leaving the section on the mechanical treatment of steel to a mechanical engineer, in the person of Mr. Hall, and also in collaborating with that gentleman in the chapters on reheating. The subject matter is confined strictly to steel, the word being used in its English and American sense, and not according to the Philadelphia classification of 1876. Iron has already been treated in the same series by the work of Professor Turner.

After a two-page introduction, consisting principally of a definition of his subject, the writer plunges directly into the first part of the work, descriptive of the various methods used in the manufacture of steel. He begins with the Bessemer process, to which five chapters are devoted, one each to practical details of the acid and basic methods, the same to their chemistry, and the fifth treats of the manufacture of steel in small converters. These latter the author regards as possessing many advantages for steel foundries. There are numerous illustrations, most of them quite up to date, but, as might be expected in connection with such an old established and well-known process, nothing particularly novel. In the plates showing the general arrangements of Bessemer plants America is not represented, the plan of the Barrow Steel Works most nearly representing the practice of this country.

The open hearth process is handled in four chapters—Gas Producers, Acid Process, Basic Process and Steel Castings. In the first the most characteristic types of producer are described and illustrated, including the Mond system and that of Fraser-Talbot. Some practical details are given concerning water gas, but this fuel is recommended for special purposes only, and not for open hearth use. The furnaces selected for illustration are not as numerous or as modern as might be expected. Engravings of tilting furnaces, both Campbell's and Wellman's, are shown, but in the author's opinion it is doubtful if their advantages are as great as they may appear at first sight. The section on valves seems rather deficient, neither the Forter nor the more recent German valves being mentioned. The detailed descriptions of the methods of working charges of various kinds are very useful and interesting, and show an intimate practical knowledge of the subject. When, however, it is stated that the use of direct metal has only been adopted in one or two cases, we presume that Mr. Harbord has inadvertently omitted the words "in Europe." The Bertrand-Thiel process is reviewed favorably, but the possibility of the greatly increased output claimed for it regarded with some skepticism. The author seems to believe that a prosperous future is in store for the Talbot process, concerning which he sums up as follows: "The great possibility of the Talbot process lies in the facilities it offers for extremely rapid work with ordinary hematite iron, as at present used in Siemens and Bessemer acid practice. In working metal of this kind . . . the output should be very large indeed, as the silicon, under basic conditions of work, is oxidized almost immediately, and it only remains to reduce the carbon to the desired extent, which can be done very rapidly, and the steel is ready." Concerning the Monell process, the opinion is expressed that the semifusion of oxides on a basic hearth will entail very heavy repairs, and that the removal of the slag will lead to considerable waste of oxide of iron.

A short but interesting chapter is devoted to armor plate, the Harvey process being described in detail, but the curious will look in vain for anything new regarding that of Krupp.

The second section of the book, on reheating, is the joint work of Messrs. Harbord and Hall. It consists of two chapters, the first descriptive of various furnace types and the second of appliances for handling material. Owing to the high price of fuel, new designs of reheating furnaces are constantly being evolved in Europe, and the more important of these are here described and illustrated. Some of them, notably Bagley's slab heating furnace, could probably be introduced with profit into American rolling mills.

The third section, describing the mechanical treatment of steel, written by J. W. Hall, covers 256 pages, within which is condensed a very comprehensive account of the processes involved in putting steel into its most important marketable forms. The opening chapters are devoted to a detailed description of mills in general, their component parts and accessories, including some interesting matter on roll design. The chapter on rolling mill engines gives very practical information on the most advantageous methods of using the power available, but wisely refers the reader to more special works for details of construction. Then follow descriptions of the principal branches of manufacture, the extensive scope of which is indicated by the following chapter headings: Section Mills, Plate and Sheet Mills, Rod Mills, Continuous Mills, Handling Material in the Stock Yard, Laying Out of the Mill, Forging by Steam Hammer, Forging by Press, Compressing Steel while Fluid, Tube Making, Wire Drawing, Protecting Steel from Corrosion (galvanizing, tin plate making, &c.). The chapters devoted to rod mills, continuous mill and stock yards show familiarity with conditions on this side of the Atlantic, as does also that on the laying out of the mill. The latter, chiefly devoted to a comparison of British and foreign practice, is free from the insularity which characterizes the work of many English writers on technical subjects. The chapters on tube making, wire drawing and the manufacture of tin plate are disappointing; they are apparently the fruits of reading rather than experience. This section of the work is concluded by descriptions and plates of the Northeastern Steel Works and the Frodingham plant, as being typical of modern English Bessemer and open hearth plants, respectively.

In the fourth and final section of the book Mr. Harbord treats of the mechanical testing of materials, the influence of other elements on iron, special steels, heat treatment and the microscopical examination of steel. The mutual relations of carbon and iron and the various forms in which the former element exists are clearly set forth, while the other metalloids are given due consideration. The chapters on special steels and heat treatment are extremely interesting, the author having evidently made special study of these subjects, and taken due cognizance of the most recent work in these lines. A large amount of space is devoted to the microscopical examination of steel, details being given of the methods employed

and the apparatus needed for this work. The characteristics of the more important microstructures are explained and illustrated, and the book proper is concluded by nearly 100 microphotographs showing the effect of mechanical treatment and heat treatment on various kinds of steel.

In the appendix, American standard specifications for iron and steel are compared with representative British specifications, and other data useful to the steel works engineer are given.

In general, it may be said that the book does not show the scientific arrangement characteristic of the better known German works, but with the full index provided this should not appreciably detract from its value. The amount of space devoted to the various divisions of the subject seems in some cases disproportionate to their importance. As, however, this is doubtless caused by the authors treating most fully those matters in which they are most interested, and which they are therefore most competent to discuss, it probably raises the average quality of their work, while throwing the book as a whole rather out of balance. The student will welcome the publication, and especially Mr. Hall's part therein, as filling a long felt want, for he will find there much information which hitherto was only available in the mill.

The illustrations are very numerous, and as aids to a better understanding of the text are an improvement on those usually found in books of this class published in Europe.

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**The Handy World Atlas and Gazetteer.** Frederick Warne & Co., 36 East Twenty-second street, New York. Pocket size. Pages 160. Cloth cover. Price, 40 cents per copy.

This little book gives in very compact form a full series of maps, covering the different countries of the world. The maps are very clear, and give so many of the cities and towns that they will be found satisfactory for all ordinary purposes. Half of the volume is used for the presentation of an alphabetical list of cities, towns, rivers, mountains, islands, &c.

## Labor Notes.

The union machinists employed by the Mark Flather Planer Company and Flather & Co., Nashau, N. H., have gone on strike in the effort to unionize these shops. About 100 men are out, but these include men who had previously been laid off for lack of employment. Both shops are running. Nashau has until recently been without a machinists' union, and the greatest harmony existed between employers and employees. An officer of the International Union went to the city and persuaded the men to organize. The immediate cause of the strike was the refusal of Flather & Co. and the Mark Flather Planer Company to take back several machinists who had been laid off because there was no work for them. The demand was formally made in the name of the union, and was refused. The employers will not give in to the demands of the men, nor will they consent to unionize their works. It is not expected that there will be much trouble in filling the places of the strikers, for there are a large number of machinists looking for work in the larger New England centers.

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The strike of brass workers at Chicago, which has been on since early in January, is no longer impeding the progress of the business. At a recent meeting of the Brass Manufacturers' Association very favorable reports were heard from the members, who claim that they are now operating their plants to a sufficient extent to meet the demand. Their employees are largely union men, who are daily deserting the strike and returning to work. The trouble grew out of the insistence on the part of the union that the closed shop be maintained; there was no question of hours or wages. Refusal of the manufacturers to accede to the demands for a closed shop precipitated the strike. Shortly after its inauguration, and with a view to making a vigorous and winning fight, the International Union called off all other brass workers' strikes in the United States and Canada and concentrated its entire strength on the Chicago fight. From recent developments little or no benefit to them seems to have been accomplished through this action.

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There has been no change in the strike of boiler makers and iron shipbuilders which has been in progress at the shipyards in the New York district since May 4. Because of the refusal of the New York Metal Trades Association to accede to the demands of District Lodge No. 2, Brotherhood of Boiler Makers and Iron Shipbuilders, for a closed shop on that date, the members of the brotherhood to the number of about 700 went out. The association was willing to renew the contract of last year, but to this the representatives of the labor union would not agree unless a clause was inserted permitting the admission of walking delegates to all shops and jobs at all times and that only members of the brotherhood should be permitted to work. It is understood that considerable dissatisfaction prevails among the strikers, and that the walking delegates are having great difficulty in preventing many of the men from returning to work. There is practically no business in shipbuilding in the port of New York at present, and the strike has caused but little inconvenience. It is said that on account of the nine-hour workday provided for in last year's contract more than $2,000,000 of business had been lost by members of the association during the year. Because of the shorter day worked at this port on ship repair work the business has gone to ports north and south where a longer day prevails.

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The machinists in the employ of the William Tod Company and the Lloyd-Booth department of the United Engineering & Foundry Company, at Youngstown, Ohio, have gone on a strike. The men struck in protest against an individual reduction, which did not affect all of the men equally and did not affect about 30 per cent. of the men at all. They declined to arbitrate the matter, and proposed a flat reduction covering all the men, amounting to a little less than the total reduction affected by the individual adjustment. It is probable that both of these companies will employ nonunion machinists.

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The Executive Council and Wage Committee of the Tin Plate Workers' International Protective Association, in session at Columbus, Ohio, on May 9, decided not to make any demand for an increase in wages, and so reported to the general convention, which met in Columbus on May 10. The convention represents tin workers of Ohio, Indiana, Michigan, West Virginia, Pennsylvania and Illinois, and has to do with wages of men who are operating tinning machines in union plate plants.

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The trouble between the International Bridge and Structural Iron Workers and the American Bridge Company has been settled. At a conference in Pittsburgh, on Monday, the American Bridge Company agreed to remove the nonunion men employed at Corall, Pa., where the concern are erecting a bridge for the Pennsylvania Railroad. The men who went out on strike returned to work on Tuesday morning, and work on the Wabash bridge and train sheds in Pittsburgh, which had been suspended, will now go steadily forward. The men were voting upon the question of a general strike, and this has been called off.

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The strike of the boiler makers at the shops of the Boston & Albany Division of the New York Central Railroad, at Springfield, Mass., and Rensselaer, N. Y., has been declared off, a settlement having been affected.

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A number of officials of the American Sheet & Tin Plate Company from New York and Pittsburgh are making an official inspection of the company's plants located in the Pittsburgh district. The works at Leechburg, Saltsburg, Scottdale and Everson were inspected on Tuesday, while the mills at Vandergrift, Hyde Park and other places will be inspected later.

# The Iron Age

**New York, Thursday, May 12, 1904.**

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - - ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR.


## The Steel Corporation and the Unions.

A peculiar statement emanates from Pittsburgh relative to the policy of the United States Steel Corporation toward labor unions. It is alleged that the strike of the structural iron workers and bridgemen in the employ of the American Bridge Company last week is believed to be the beginning of the end of the recognition of any "closed shop" by the United States Steel Corporation. The further assertion is made that the corporation is contemplating conducting its business without entering into yearly agreements with labor organizations, having grown tired of the numerous quarrels with unions.

While the statement above referred to may have a substantial basis, it is hardly credible that authority has been given to any one to say definitely what the policy of the corporation may be in this respect. It is not the habit of the management to disclose its plans in this way. Nevertheless, the appearance of this statement may have considerable significance. The Steel Corporation is unquestionably tired of the frequent interference with its business by labor unions, just as other large employers have grown tired all over the country. A decided disposition is manifested in every direction to get rid of the domination of labor unions, and it would by no means be remarkable if such a policy should have been decided upon by the management of the corporation. But in view of the manner in which its relations with labor unions have thus far been conducted, it is to be expected that whatever policy may have been decided upon will be conducted with circumspection, and not in such a manner as to create serious disturbance.

Whatever criticism may have been made against the management of the affairs of the corporation in other respects, it must be conceded that the conduct of its relations with labor has been worthy of great praise. When the corporation was constituted, labor leaders hailed the announcement with great satisfaction, as they believed that it meant the establishment of a new era for labor organizations. Viewing the situation from the speculative standpoint, they were of the opinion that the management of such a stupendous employer of labor would necessarily seek to cultivate the closest relations with organized labor for the purpose of maintaining a condition of permanent peace. They argued, that the stockholders would be exceedingly anxious to have their various works free from labor troubles, as anything of this character would have an adverse effect on the value of stocks. Therefore they were of the opinion that the management would go to almost any length for the purpose of avoiding interference with manufacturing operations from this particular cause. Some went even so far as to predict that a coalition would be formed between the corporation and the labor unions which would make the latter stronger than ever. The unions, however, had a rude awakening when they attempted to display their power in the very first year of the operations of the great consolidation. They were so confident of the strength of their position that they did not hesitate to enter upon a contest for the extension of union regulations to all the plants controlled by the corporation. But neither did the management hesitate to accept the challenge, although realizing that a crucial test was being made and that the result might, for a time, be adverse to the preservation of stock values. While the controversy was pressed by the management to the point of victory, yet great astuteness was displayed at that time in the announcement that the corporation did not propose to refuse to employ union men in its plants. It simply refused to extend union rule to mills which had been operated on a nonunion basis prior to the consolidation.

In all its relations with unions since that time the corporation has shown great prudence. The management has demonstrated how it has been possible to secure concessions from unions without making threats. A signal instance of this character was displayed when a concession was obtained from the workmen in tin plate mills for the purpose of securing contracts for tin plate from consumers who had up to that time been purchasing tin plates abroad under the drawback arrangement. Superior leadership was further shown when the concession was obtained from workmen in both sheet and tin plate mills to enable the union mills to compete in labor cost with mills running nonunion. Throughout its history thus far the United States Steel Corporation has shown a good example to other large employers of labor. While pursuing a conciliatory policy, it has not displayed any weakness whatever. On the one hand, it has not curried favor with labor unions by surrendering control of nonunion mills, and, on the other hand, it has not seriously antagonized its union employees by imperatively insisting upon the establishment of the open shop. Possibly the time may be at hand when an open shop policy can be safely adopted. In view of its record, however, the belief is warranted that no direct attack is contemplated upon the unions *en masse*.

## The Movement to Revive American Ocean Shipping.

The efforts which have been put forth for so many years to secure some kind of legislative action beneficial to American ocean shipping have at last borne fruit in the creation of the Merchant Marine Commission, charged by Congress with the duty of investigating the condition of our foreign commerce and reporting a measure designed to afford some relief. This is the outcome of the protracted struggles of conflicting interests which have thus far been unable to agree upon a definite policy to be pursued.

The question has been so thoroughly discussed in the halls of Congress and in the public press that hardly anything new remains to be said. It is certainly most desirable that the commission will evolve some plan which will at least partially satisfy those who have for so many years been diligently working to secure the rehabilitation of the American merchant marine. The *Marine Review*, which is the leading exponent of the shipping interests, has this to say upon the subject: "It is to be hoped that the report of this commission will be the last word on the subject. If it is not, it will be the fault of the commission, for every opportunity will doubtless be afforded to them to point out the elements to provide the remedy. If the avenue to rehabilitation does not lie through direct subsidies, then let us abolish the thought of subsidies altogether; if it lies in a preferential tariff on goods brought to the United States in American ships, then let us have preferential tariffs." The sentiment thus expressed will be echoed throughout the country, as unquestionably the public is growing weary of this perennial

question of what can be done to restore our shipping to its old position in the ocean carrying trade.

The point is well taken by the *Marine Review* in this connection, that whatever measure is introduced into Congress as a result of the inquiry of the commission should be a common one; it should declare that the beneficiaries of the great American merchant marine are the manufacturers of New York, Pennsylvania, Ohio and Illinois, and the farmers of Nebraska, Iowa, Minnesota and the Dakotas; that there is no spot in this great domain of 75,000,000 people which is not interested in the American ship. Notice is thus taken of the rumors which have been circulated concerning the hostility of coast interests to lake interests and *vice versa*. The great extent of the lake commerce is shown, and the prophecy is made that in the not distant future a 20-foot waterway will be seen from Chicago to the sea. The lake shipping interests will then be directly connected with the ocean carrying trade. Hence, any relief extended to American shipping should embrace lake shipping interests. This is by no means an objectionable claim. Whatever measure may be agreed upon should be broad enough to cover any American shipping enterprise which is able to participate in ocean commerce, whether that enterprise originates on the coast or on navigable waters in the interior. The measure should not be narrow, but all embracing.

The *Marine Review* says that "in the potentiality for doing good to American shipping the present year is probably the greatest which the United States has experienced since it became a nation." In the passage of the measure for the appointment of a commission "Congress has manifested a desire to get at the truth." This is well stated to be all that the friends of American shipping wish—simply the truth.

## Infringements of Patents.

The protection to inventors extended by our patent laws has very frequently been shown to be merely theoretical. It has been well stated that the granting of a patent merely gives the patentee a right to claim the protection of the laws and that he must defend himself against all comers. He simply secures a good standing in court. This is exceedingly exasperating to those who pin their faith in the security which they are strongly justified in assuming should follow the issuing of a patent. The frame of mind in which inventors are rapidly getting is shown by the following letter which we have received from one of our subscribers:

"I believe a vast amount of good could be done and thousands of inventors would be benefited if the patent laws were changed so that persons knowingly infringing a patent would be liable to criminal prosecution, with the penalty of a term in prison, the same as counterfeiters. Why should not the Patent Office be made supreme in infringement cases, with authority to issue injunctions against infringers, bringing them to trial and landing the guilty parties in prison? It seems to me that infringers of patents are on the same plane with mail thieves and counterfeiters. The Government prosecutes them, and in the same way should it prosecute infringers, without expense to inventors. As matters stand now, if an inventor is not in possession of thousands of dollars to expend in litigation, he must endure having his patents infringed right and left and his profits stolen by any one who chooses."

This is, of course, an old subject. It would be impossible to have the laws changed so as to enable infringers to be dealt with as drastically as our correspondent desires, but, on the other hand, the point which he makes seems reasonable, and that is that the path of infringers should be made much more thorny than it is now.

## PERSONAL.

M. F. Cunningham, after 15 years' service, has severed his connection with the Waltham Emery Wheel Company, to assume the management of the Superior Corundum Wheel Company, Waltham, Mass.

W. P. Beaver has resigned his position as assistant to the president of the American Sheet & Tin Plate Company, Pittsburgh. Mr. Beaver received a handsome loving cup as a recognition of the regard in which he is held by his associates in that company, the presentation speech being made by President W. T. Graham. Mr. Beaver was auditor of the American Tin Plate Company from 1899 to 1902, inclusive. Early in 1903 he was elected assistant to the president, retaining that position after the consolidation of the American Tin Plate Company and the American Sheet Steel Company. He has accepted a position in the executive department of the Bradstreet Company, New York.

C. E. Michael has been elected president of the Virginia Bridge & Iron Company, Roanoke, Va., to succeed W. E. Robertson, resigned. Mr. Michael had been general manager for several years.

J. Walter Rhodes, president of the Cherry Valley Iron Company, Pittsburgh, has returned from a three months' trip to Europe, much benefited in health.

Charles E. Pope, president of the Pope Tin Plate Company, Pittsburgh, has returned from a two months' trip to Europe.

George E. McCague, formerly traffic manager of the Carnegie Steel Company, Pittsburgh, has sailed for Europe.

Louis Katona, metallurgical engineer of Resicza, Hungary, has arrived in this country en route for St. Louis.

David M. Parry of Indianapolis, president of the National Association of Manufacturers, has just returned from Europe.

Howard M. Hooker of Pittsburgh read an interesting paper on "The Pig Iron Warrant System and Its Advantages to the Consumer," before the Pittsburgh Foundrymen's Association on Tuesday evening, May 10.

Joseph Scranton, formerly assistant sales agent of the Lackawanna Steel Company, is now connected with the New York office of the Cambria Steel Company.

G. L. Luetscher has established himself as consulting metallurgist, with headquarters at Room 700, Westinghouse Building, Pittsburgh.

George Thomas, 3d, formerly superintendent of the Diamond State Steel Company's mills at Wilmington, Del., is now with the firm of E. B. Leaf & Co., Philadelphia and Pittsburgh.

H. Schütte of the large German machinery house of Schuchardt & Schütte is making a tour of the principal machine tool building establishments in this country. At present Mr. Schütte is in Boston.

Fred. A. Geier, secretary and treasurer of the Cincinnati Milling Machine Company, who has spent several months abroad, returned last Friday.

John Findley Wallace of Chicago, general manager of the Illinois Central Railroad, has accepted the appointment of chief engineer in charge of the construction of the Panama Canal. Mr. Wallace will receive a salary of $25,000 a year. Mr. Wallace is past president of the American Society of Civil Engineers, the American Railway Engineering and Maintenance of Way Association and the Western Society of Engineers. He is also a member of the Institute of Civil Engineers of Great Britain, the American Railway Association, American Railway Guild, Engineers' Club of New York and the Chicago Club and the Union League Club of Chicago.

JOSEPH T. MCCORMICK, one of the proprietors of the Connellsville Machine & Car Company, Connellsville, Pa., and president of the Second National Bank of Connellsville, died May 3, aged 75 years.

## The Philadelphia Foundrymen's Association.

The one hundred and thirty-eighth regular meeting of the Philadelphia Foundrymen's Association, held Wednesday evening, May 4, at the Manufacturers' Club, was devoted to a reception and vaudeville dinner in honor of the Pittsburgh and the New England foundrymen's associations, who were the guests of the local organization. Thomas Devlin, president of the Philadelphia Foundrymen's Association, first held an informal reception in one of the parlors of the clubhouse, after which the dinner was served in the roof garden.

After an elaborate menu President Devlin made an address, welcoming the guests and members and giving some interesting historical facts. He outlined a brief sketch of the local association, its aims and the benefits realized, and gave an account of the formation of the American Foundrymen's Association, which was the result of just such a gathering, and held its first meeting on March 12 to 14, 1896, and later the formation of the National Founders' Association and other foundrymen's associations. The Philadelphia association, he said, was glad to have the opportunity of welcoming the associations from Pittsburgh and New England, and he hoped that much good would come from the interchange of thoughts and ideas. He called upon Dr. E. E. Brown to perform the duties of toastmaster for the evening, which that gentleman did in his usual pleasing manner. As the dinner was of a "vaudeville" type, specifications covering this new form of entertainment were prominently displayed. Speakers were allowed but three minutes to make an address, or, in shop lingo, "Molders were allowed three minutes to pour off under 'shop rules.'" Those in attendance were admonished to "come in quietly; sit down; wait." This was followed by such pointed insinuations as these: "Gaggers will be freely used on all speakers running over three minutes." "All vent wires should be removed from the shad before swallowing." "The cupola boss will see that the fuel is evenly distributed, so that the blaze should not get out quicker in one place than another." "Weigh your fuel and iron before it goes into the cupola; then weigh your chances of getting home." "Steel—Iron—Brass—that's us." "Because you own a hammer, don't knock." Responses to toasts, or "pickings from the scrap pile," were therefore mostly brief.

Alexander E. Outerbridge, Jr., speaking on "The Triplets, Boston, Pittsburgh, Philadelphia," extended a hearty greeting to the visitors and guests in attendance and hoped for material benefits from closer organization work.

A. W. Slocum, president of the Pittsburgh Foundrymen's Association, in whose behalf he addressed those present, said, in part, that they were much gratified in learning of the move which had been made by the Philadelphia Foundrymen's Association to bring these associations closer together in their work. By the individual meetings of the associations considerable benefit is to be obtained, but such gatherings as these bring us into a broader field, as does the American Foundrymen's Association in its work, and all tend in the right direction, to advance the progress of the foundry industry.

Henry A. Carpenter in a few words responded for the New England Foundrymen's Association, saying that association work had broadened the foundries out; their educational features were strong, and joint meetings of the various associations could only result in their mutual betterment, both for the organizations themselves and for advancement of foundry education.

Dr. Richard Moldenke briefly outlined the proposed foundry exhibit at St. Louis, and the influence of its educational features on the general public, as well as upon the practical foundryman.

Dr. David T. Day of the United States Geological Survey responded for J. A. Holmes, chief of the Department of Mines and Metallurgy, Universal Exposition, St. Louis. He outlined the possibilities of the foundry exhibit at St. Louis, saying: "The building will be of iron and steel construction, 100 x 110 feet. The equipment already offered by different manufacturers will be more than sufficient to occupy all the space. A number of parties have agreed to operate portions of this equipment from time to time during the exposition period, making a variety of castings. We must not forget, however, that the first and foremost purpose of this undertaking has been to establish and arrange a headquarters for the foundrymen who visit the exposition, and a means of making these headquarters a source of instruction, as well as comfort, for the foundrymen. The exposition management has assumed the responsibility for the construction of the building, for the employment of a superintendent and the ordinary labor connected with the care of such a foundry. It has also assumed the responsibility of operating such portions of the equipment as it may be thought best to operate. You may be glad to know that, through the help of the United States Geological Survey, we will operate, in connection with this foundry, four coke ovens, in which will be produced coke from each of the important coal deposits in the United States. A coal washing plant will also be installed to wash coal before coking, and, by means of experimental cupolas in the foundry, tests of the quality of this coke will be made. This series of tests should be of considerable use to the practical foundryman. It has also been arranged to establish a laboratory in connection with the foundry plant, and all foundry material and products will be carefully analyzed."

Howard Evans, on behalf of the Philadelphia association, presented Thomas Devlin and A. W. Slocum, presidents of the Philadelphia and Pittsburgh associations, and Henry A. Carpenter, in behalf of B. M. Shaw, president of the New England Association, with gavels of live oak from the old United States frigate "Constitution." These were suitably inscribed on silver plates attached to each. Thomas Devlin historically described "Old Ironsides," as this frigate was termed, and proved the authenticity of the wood of which the gavels were made. Both Mr. Slocum and Mr. Carpenter accepted the gift, in behalf of their associations, with short addresses.

W. H. Ridgeway, James A. Beckett, Stanley G. Flagg, T. James Fernley, S. G. H. Fitch, and W. S. Hallowell also made short addresses.

During the evening songs dedicated to the Pittsburgh, New England and Philadelphia foundrymen's associations, the World's Fair foundry exhibit committee and the foundry exhibit at the fair, arranged for familiar melodies, were sung by those present. Vaudeville talent in song, dances and specialties furnished entertainment during a large part of the evening.

The committee in charge of arrangements were as follows: Thomas Devlin, president; Howard Evans, secretary; Dr. E. E. Brown, Josiah Thomson, George C. Davis, George S. Romiger, J. H. Sheeler, who were tendered a hearty vote of thanks for the very successful outcome of their efforts. The attendance of local foundrymen was gratifyingly large. Among the guests were the following:

F. E. Stockwell, secretary New England Foundrymen's Association, Barbour-Stockwell Company, Cambridge, Mass.
E. E. Durant, Geo. F. Warner Mfg. Company, New Haven, Conn.
Henry Souther, Souther Engineering Company, Hartford, Conn.
Theo. H. Colvin, Colvin Foundry Company, Providence, R. I.
L. M. Harper, Becker-Brainard Machine Company, Hyde Park, Mass.
H. A. Carpenter, A. Carpenter & Son Foundry & Machine Company, Providence, R. I.
B. M. Shaw, president New England Foundrymen's Association, Walker-Pratt Mfg. Company, Watertown, Mass.
S. G. H. Fitch, Vaughn Machine Company, Peabody, Mass.
Dr. Richard Moldenke, secretary American Foundrymen's Association, New York.
A. W. Slocum, president Pittsburgh Foundrymen's Association, National Car Wheel Company, Pittsburgh, Pa.
A. A. Coburn and C. W. Johnson, Coburn Trolley Track Mfg. Company, Holyoke, Mass.
Eric H. Ewertz, Victor Metal Company, East Braintree, Mass.
John Birkinbine, Philadelphia.
Dr. David T. Day, United States Geological Survey, Washington, D. C.
Darwin Almy, Providence Steel Casting Company, Providence, R. I.
Mr. Robertson, Field-Evans Iron Company, Pittsburgh, Pa.
G. C. Schade, Braddock Machine & Foundry Company, Braddock, Pa.

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The Pressed Steel Car Company, Pittsburgh, have received an order from the Wabash Railroad for 1500 steel cars, which will be built at the McKee's Rocks works.

# Pig Iron Production Heavily Increased.

## Stocks Slightly Reduced.

A very large number of the principal furnace plants have done exceptionally well in April so far as output is concerned. The returns from the producers given below show that the Shenango Valley, Pittsburgh, the Wheeling district, the Mahoning Valley and the Chicago district in particular increased their production notably in spite of the fact that the month of April has only 30 days.

*Coke and Anthracite Furnaces in Blast.*

| Location of furnaces. | May 1. Number of stacks. | May 1. Number in blast. | May 1. Capacity per week. | April 1. Number in blast. | April 1. Capacity per week. |
|---|---|---|---|---|---|
| New York | 18 | 6 | 9,267 | 7 | 9,436 |
| New Jersey | 8 | 4 | 4,710 | 4 | 4,326 |
| Spiegel | 2 | 2 | 259 | 2 | 273 |
| Pennsylvania: | | | | | |
| Lehigh Valley | 27 | 14 | 9,150 | 14 | 8,792 |
| Spiegel | 2 | 2 | 1,750 | 1 | 73 |
| Schuylkill Valley | 13 | 9 | 8,060 | 6 | 5,817 |
| Low. Susquehanna | 10 | 4 | 6,319 | 4 | 5,732 |
| Lebanon Valley | 11 | 3 | 2,317 | 2 | 1,452 |
| Spiegel | 1 | 1 | 811 | 1 | 709 |
| Pittsburgh Dist | 37 | 36 | 97,478 | 34 | 88,450 |
| Spiegel | 3 | 3 | 2,586 | 3 | 2,528 |
| Shenango Valley | 19 | 12 | 24,302 | 12 | 21,616 |
| West. Penn | 18 | 13 | 19,724 | 16 | 21,404 |
| Spiegel | 1 | 1 | 983 | 0 | 0 |
| Maryland | 5 | 3 | 4,836 | 3 | 5,147 |
| Wheeling Dist | 12 | 10 | 21,672 | 8 | 17,985 |
| Ohio: | | | | | |
| Mahoning Valley | 15 | 12 | 24,596 | 11 | 24,467 |
| Cent. and North | 16 | 13 | 28,830 | 12 | 23,090 |
| Hocking Valley | 2 | 2 | 642 | 2 | 700 |
| Hanging Rock | 12 | 6 | 4,679 | 8 | 6,154 |
| Michigan | 1 | 1 | 1,307 | 1 | 1,325 |
| Illinois | 20 | 15 | 37,900 | 15 | 34,175 |
| Spiegel | 2 | 2 | 2,464 | 2 | 1,619 |
| Minnesota | 1 | 0 | 0 | 0 | 0 |
| Wisconsin | 5 | 4 | 4,738 | 4 | 4,611 |
| Missouri | 1 | 1 | 700 | 0 | 0 |
| Colorado | 5 | 1 | 1,410 | 1 | 3,500 |
| The South: | | | | | |
| Virginia | 23 | 11 | 7,339 | 10 | 7,142 |
| Kentucky | 8 | 2 | 692 | 2 | 650 |
| Alabama | 42 | 27 | 30,787 | 25 | 28,974 |
| Tennessee | 16 | 9 | 5,996 | 9 | 6,180 |
| Georgia | 1 | 1 | 1,051 | 1 | 930 |
| North Carolina | 1 | 0 | 0 | 0 | 0 |
| Totals | 358 | 230 | 367,355 | 220 | 337,257 |

During April there were blown in Niagara A furnace in New York, Brooke, Keystone and one Swede in the Schuylkill Valley, one Crane and the new Palmerton spiegel furnace in the Lehigh Valley, one Clairton and one Eliza in the Pittsburgh district, Robesonio in the Lebanon Valley, one Longdale in Virginia, Belmont and Top Mill in West Virginia, Steelton in Ohio, Missouri, Anna in the Mahoning Valley, one Pioneer and one Oxmoor in Alabama, and Johnson City in Tennessee. There were blown out Burden and Niagara B in New York, one Hokendauqua in the Lehigh Valley, Everett in Western Pennsylvania, Fulton and Hamilton in the Hanging Rock region and one Bon Air in Tennessee.

*Production of Steel Companies.*—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Ashland, Republic, Johns & Laughlin, Clairton, La Belle, Bethlehem and Colorado companies show a total product of 974,006 tons for April, as compared with 913,412 tons for March, 756,230 tons for February, 502,994 tons for January, 406,730 tons for December, 553,067 tons for November, 829,215 tons for October, 956,363 tons for September, 993,564 tons in August, 987,855 tons in July, 1,021,839 tons in June 1.037,325 tons in May and 966,850 tons in April.

*Production of Spiegeleisen.*—The production of spiegeleisen and ferromanganese was 29,145 tons for April, as compared with 23,128 tons in March, 12,961 tons in February, 6673 tons in January, 15,394 tons in December, 17,695 tons in November, 10,374 tons in October, 8406 tons in September, 15,862 tons in August, 14,933 tons in July, 16.309 tons in June, 17,600 tons in May and 17,555 tons in April.

*Monthly Coke and Anthracite Pig Iron Production.*

| | December. (31 days) | January. (31 days) | February. (29 days) | March. (31 days) | April. (30 days) |
|---|---|---|---|---|---|
| New York | 36,320 | 32,577 | 35,599 | 41,788 | 41,507 |
| New Jersey | 19,324 | 19,916 | 20,380 | 21,326 | 21,298 |
| Lehigh Valley | 24,573 | 35,735 | 35,038 | 38,348 | 41,184 |
| Schuylkill Val. | 37,669 | 23,918 | 24,309 | 24,047 | 30,293 |
| Lower Susquehanna and Lebanon Valley | 8,885 | 17,469 | 28,829 | 29,364 | 37,325 |
| Pittsburgh dis. | 178,257 | 248,024 | 328,848 | 398,464 | 422,572 |
| Shenango Val. | 24,856 | 31,445 | 76,108 | 91,872 | 104,151 |
| West. Penn | 92,422 | 85,186 | 93,877 | 94,790 | 96,134 |
| Md., Va. and Kentucky | 60,748 | 56,169 | 54,277 | 58,668 | 55,145 |
| Wheeling dist. | 3,437 | 21,089 | 66,067 | 78,646 | 86,658 |
| Mahoning Val. | 30,289 | 59,932 | 65,511 | 102,356 | 113,761 |
| Cent. and No. | 57,296 | 41,491 | 80,374 | 99,253 | 114,100 |
| Hocking Valley and Hanging Rock | 18,244 | 17,250 | 24,819 | 30,353 | 23,676 |
| Ill.,Minn.,Wis., Mich.,Mo.and Colorado | 96,623 | 73,956 | 122,892 | 176,678 | 204,108 |
| Alabama | 129,350 | 123,991 | 119,062 | 128,947 | 132,245 |
| Tennessee, No. Carolina and Georgia | 28,402 | 33,089 | 29,459 | 32,165 | 29,549 |
| Totals | 846,695 | 921,231 | 1,205,449 | 1,447,065 | 1,553,706 |

**Stocks.**

Believing that a classification of the merchant stocks by general geographical divisions would aid in a correct appreciation of the situation, we have arranged them in three groups: The Eastern, which includes New York, New Jersey, and the Schuylkill, Lehigh, Lower Susquehanna and Lebanon valleys; the Central Western and Northwestern, which includes Western Pennsylvania, the Shenango and Mahoning valleys, the Hanging Rock region, Central and Northern Ohio, and Michigan, Illinois, Wisconsin, Minnesota and Missouri; and the Southern, which includes Virginia, Kentucky, North Carolina, Georgia, Alabama and Tennessee. The stocks, of course, do not include the holdings of the steel companies:

*Merchant Furnace Stocks.*

| | January 1. | February 1. | March 1. | April 1. | May 1. |
|---|---|---|---|---|---|
| East | 88,936 | 87,712 | 79,520 | 71,230 | 74,637 |
| Central and Northwest | 234,663 | 217,080 | 188,686 | 161,971 | 145,394 |
| South | 274,305 | 271,610 | 261,339 | 224,712 | 224,028 |
| Totals | 597,904 | 576,402 | 529,545 | 457,913 | 444,059 |

There has, therefore, been a slight reduction in the stocks, due entirely to the Central West and Northwest, while the East shows a moderate accumulation.

**The Washington Coal & Coke Company.**—Recently the United Coke & Gas Company, the construction department of the Semet-Solvay Company, controlling by-product coke ovens in this country, made a request of the Washington Coal & Coke Company of Pittsburgh that they furnish them a block of Washington coal, to be used in the exhibit of the Semet-Solvay Company at the World's Fair, St. Louis. Their exhibit will consist of charts, maps and drawings showing the construction of the Semet-Solvay by-product coke ovens, and they desired to have a block of Washington coal as being a representative coal from which to make by-product coke. The Washington Coal & Coke Company have furnished to the Semet-Solvay Company a 3½-foot cube of coal, taken from their No. 1 Washington mine, and it has been shipped to St. Louis. It was the original intention of the Semet-Solvay Company to have their exhibit at St. Louis include by-product ovens, but there was not time to do this and for this reason their exhibit will consist as stated above of charts, maps and drawings showing the construction of the ovens.

Dispatches from Chicago state that three commissioners of the Chinese Government have arrived in that city for the purpose of beginning an investigation of American steel plants. It is said that China intends to construct a plant for the manufacture of rails and armor plate, and the commissioners will inspect the leading steel works in this country with the view of purchasing improved machinery.

# MANUFACTURING.

### Iron and Steel.

The Greenville works of the United States Steel Corporation, at Greenville, Pa., will be dismantled and the best part of the equipment removed to other plants. The works were formerly operated by P. L. Kimberly Company, and contain 30 single puddling furnaces, four heating furnaces and three trains of rolls, the output having been iron and steel bars and skelp, with an annual capacity of about 25,000 tons.

Application will be made in a few days by the receivers of the Clairton Steel Company of Pittsburgh for their discharge. The details for the transfer of the plant are being arranged as speedily as possible, and it is expected it will be turned over not later than May 20.

John P. Harris, Bellefonte, Pa., receiver for the Jenkins Iron & Tool Company, informs us that the property of the company, consisting of 15 acres of ground and fully equipped works, including a large rolling mill and puddle mill, chain factory, foundry implement factory, machine shop, blacksmith shop and several other buildings, was sold April 26 to John Jenkins of Milton, Pa., for $5900, subject to two mortgages of about $9000. It is probable that Mr. Jenkins will organize a company and operate the plant.

The furnace of the Lookout Mountain Iron Company at Battelle, Ala., is rapidly approaching completion, and it is expected that it will go into blast not later than July 1.

It is probable that within a short time the ground now occupied by the Howe-Brown works of the Crucible Steel Company of America, in Pittsburgh, will be sold to the Pennsylvania Railroad. Negotiations for the purchase of the property by the railroad have been under way for more than a year. The Howe-Brown works have not been operated to full capacity for some time, and in case this deal is made the equipment in the plant will be removed to other works of the Crucible Steel Company.

The Hanging Rock Iron Company, Hanging Rock, Ohio, blew out their Hamilton Furnace on April 7. Labor troubles caused the blowing out, the furnace having been in blast three years and seven months, on one lining.

Burden Furnace of the Burden Iron Company, Troy, N. Y., was blown out April 30. It is to be relined at once.

The C. Pardee Works, Perth Amboy, N. J., expect soon to start up their two new 25-ton open hearth steel furnaces, which were recently completed, in connection with their rolling mill, which has been in operation about three years, and their shafting plant, which was started up some time previous.

The Bessemer blooming mill No. 1 and the rail mill of the Pennsylvania Steel Company's plants, at Steelton, are idle this week on account of a shortage of pig iron. This is the first time in more than a year that the supply of pig has been less than the demand.

The Harrisburg Pipe & Pipe Bending Company, Harrisburg, Pa., this week put all departments on double turn. This would have been done several weeks ago had the company been able to operate their new rolling mill on full time.

No. 1 mill at Edgar Thomson Steel Works of the Carnegie Steel Company, at Bessemer, known as the old rail mill, has recently been put on billets.

The cut nail factory of the Chicago Steel Mfg. Company will be moved from Hammond to Newcastle, Ind. The new building, having 10,000 square feet of floor space, will be erected in proximity to the Indiana rolling mill.

### General Machinery.

A postal to the trade from the McCabe Hanger Company, New York, announces that they do case hardening, annealing and square shearing. The company's factory is located at 425-427 West Twenty-fifth street, where they can shear metal up to 8 feet long and No. 8 gauge.

The Grinding Machinery Company, 29 South Canal street, Chicago, a comparatively new firm, who are agents for representative manufacturers of grinding tools, and carry such machines in stock, are attracting attention to their store by means of a Covell Mfg. Company's automatic sharpener, which they have at work in their show window, actuated by a small motor, grinding Simonds saws.

A 50 horse-power boiler and engine and a traveling crane are required by the Rochester Foundry & Machine Works, Rochester, N. H., who are to erect a new machine shop, 60 x 80 feet. The company will move most of the machinery from their present plant into the new building, but later on they will be in the market for additional tools.

The H. K. Porter Company, Pittsburgh, builders of light locomotives, have received an order for several locomotives for shipment to Mexico.

The Enterprise Tool & Metal Works, Chicago, have been incorporated by Frank Rosengren, George T. Rosengren and Chas. W. Nelson. The company will do all kinds of experimental work, making tools, dies, patterns, models, special machinery and similar work. They have a capital stock of $10,000.

Fay & Scott, Bangor, Maine, have added a stockroom, 40 x 50 feet, to their machine shop. The company report a large demand for their heavy engine lathes.

The Père Marquette Railroad Company have decided to defer the rebuilding of their shops at Saginaw, Mich.

The Penobscot Machine Company, Bangor, Maine, have secured territorial rights for the use of ferrofix from the American Brazing Company.

The Toronto Machine Company, Toronto, Ohio, manufacturers of the Paragon tool holder, are about to place on the market a complete line of lathe and planer tools, chasing tools, cutting off tools, side tools, boring bars and a modern planer bar. They have applied for patents on these new tools and will have them ready for the trade within a short time.

The Colorado Iron Works Company, Denver, Col., have reincorporated under the laws of Maine, increasing their capitalization of $240,000 to $500,000. They state that during the past eight years the business of the company has been so prosperous that the trial balance showed assets double the capitalization of $240,000, and the increase in stock has now been made in preference to carrying the increased assets as surplus. The laws of Maine were considered more favorable for the purposes of the company than those of Colorado or any other State.

Lloyd Mfg. Company, manufacturers of steel and wire specialties and automatic machines for weaving coiled wire fence, Minneapolis, Minn., will exhibit in Section 8A in the Manufactures Building at the St. Louis World's Fair.

The Moultrie Iron Works, Moultrie, Ga., are building a machine shop in Tallahassee, Fla., where they will do general repair work. The equipment, which has been purchased, will include Lodge & Shipley lathes, Cincinnati Machine Company drills, Cincinnati Shaper Company shaper, Wiley & Russell bolt machines and Schofield boiler and engine. The company will also handle a full line of mill supplies.

The York Mfg. Company, York, Pa., have purchased additional real estate and this week began the work of erecting a new pattern shop, with a frontage of 65 feet and a depth of 115. The crane building will be improved and enlarged. The company have about as much business as they can well handle at present.

The Phœnix Iron Company, Phœnixville, Pa., are building an immense crane for the handling of the steel for the great St. Lawrence bridge near Quebec. It will be one of the most powerful ever made.

The E. J. Moore Machine & Foundry Company, Philadelphia, Pa., have made an assignment to William T. Wheeler. The liabilities will not exceed $16,000 and the assets will probably be above that amount.

The Frazer Machine Works, Cleveland, have changed their name to the Industrial Machine Works. They will make brick pressing and other machinery.

The Urbana Mfg. Company, Urbana, Ohio, capital stock $10,000, have been organized by Charles G. Kennedy, R. H. Murphy, J. M. Russell, Ira C. Koehne and C. R. Murphy. They will manufacture automatic machinery.

The Sibley Machine Tool Company have been incorporated, at South Bend, Ind., with $70,000 capital, by P., E. E. and O. W. Sibley, Wm. Holland and Cyrus Workinger.

The Zanesville Mining Tool Company and the Union Machine Company, Zanesville, Ohio, have combined interests under the latter name. The capital stock of the company has been increased from $25,000 to $75,000. The machinery and tools of the Zanesville Mining Tool Company will be moved to the shops of the Union Machine Company.

The Ramapo Iron Works, Hillburn, N. Y., are building a small brick addition to their machine shop for the accommodation of air compressors and blowers. Louis Sibley, who has been employed by the company for a long time as pattern maker, has been made superintendent of the car shops.

### Power Plant Equipment.

The Excelsior Bobbin & Spool Company, who are to erect new buildings in Newtown, Pa., are in the market for 125 horse-power engine and two 100 horse-power return tubular boilers. They will also require circular saw tables. Ballinger & Perrot, Twelfth and Chestnut streets, Philadelphia, have the installation of machinery in charge.

The Metcalfe Gas & Gasoline Engine Company, Quincy, Pa., will enlarge their shops. The demand for their gasoline engine is said to be greatly in excess of the capacity of the plant.

The Sweet Power Company, Medina, N. Y., have the construction of the larger power dam at that place well under way and have installed the first of three penstocks and turbines, which will constitute the present plant.

The Board of Public Service of Springfield, Ohio, has placed a contract with the William Todd Company, Youngstown, Ohio, for a new water works pumping engine, to have a capacity of 10,000,000 gallons per day. The company have given bonds to deliver the engine within eight months. Additional boiler equipment will be purchased for the plant.

The Forest City Brewing Company, Cleveland, have placed a contract with T. H. Brooks & Co. of that city for the structural steel work required for their new brewery. John Schmeller

of Cleveland has the general contract except for the steel work. The architects are preparing plans and specifications for the equipment, which will include a power house and ice machine outfit.

The Ohio Motor Company, Sandusky, Ohio, manufacturers of gas engines, have placed a contract for the erection of a brick and steel factory addition, 60 x 190 feet. A traveling crane covering the entire building will be installed. It is expected the addition will be completed by July 1.

The Lorain Gas Company, Lorain, Ohio, are installing an electric light plant. Power will be furnished by two 280 horse-power gas engines, direct connected to generators.

The Kenton Gas Engine Company, recently organized at Kenton, Ohio, have elected W. B. Gramlich, president, W. G. Snyder, vice-president, and George Gramlich, secretary. The company are erecting a new factory building on the Big Four Railway tracks and North street, that city. They will manufacture gas engines.

The village of Crestline, Ohio, has voted to erect a water works system at a cost of $100,000. Plans for the plant have been prepared by the Walter P. Rice Engineering Company, Cleveland. The Pennsylvania Railway Company have agreed to extend their yards and erect a new roundhouse at Crestline and to use 500,000 gallons of water per day as soon as the system is completed.

The Board of Trustees of the Ohio State School for the Blind, at Columbus, Ohio, will receive bids until May 21 for furnishing, setting and connecting one 200 horse-power water tube boiler and two 100 horse-power water tube boilers, or for 100 horse-power tubular boilers. Specifications have been prepared by Stribling & Lum, 85 North High street, Columbus. H. P. Crouse is president of the Board of Trustees.

### Foundries.

The plant of the American Steel Foundries, at Sharon, Pa., which was shut down recently on account of labor troubles, has again started up, the dispute having been adjusted.

The Central Car Wheel Company, Pittsburgh, controlled by the Pennsylvania Malleable Company, received an order in February for 800 car wheels for a railroad in Corea. The order is just about ready for shipment, but a few days ago the company received notice that it had been cancelled on account of the war between Russia and Japan.

The West Penn Foundry & Machine Company, Avonmore, Pa., builders of rolls and rolling mill machinery, have also gone into the manufacture of mine cars, car wheels and small castings for coal and coke plants.

The Geo. H. Smith Steel Casting Company, Milwaukee, Wis., sustained a considerable loss by fire recently, the main foundry building being almost totally destroyed. They have just completed an addition, however, which will be utilized in taking care of customers until the foundry is rebuilt. The company expect to begin rebuilding immediately and hope to be in good running order again within four to six weeks.

The Johns & Steward Machine Company, Birmingham, Ala., who do all kinds of machine repairing and also contract for new work, have just made a lot of derrick castings for the Alabama White Marble Company, Sylacauga, Ala.

The Watson-Frye Foundry, Bath, Maine, have secured the territorial rights for the use of ferrofix from the American Brazing Company.

The Rhode Island Malleable Iron Works, Hillsgrove, R. I., have added to their power plant to provide accommodations for a new engine, and have doubled the size of their shipping room.

The Thomas Devlin Mfg. Company, Philadelphia, manufacturers of malleable iron fittings, malleable and soft gray iron, brass and steel castings, contemplate the erection of galvanizing works at their plant in Burlington, N. J.

The recent fire at the plant of the Marion Malleable Iron Works, Marion, Ind., only damaged the annealing room, and the company are proceeding with business as usual.

### Bridges and Buildings.

The George A. Fuller Company, builders, Chicago, have closed a contract with George E. Rector for the erection of a modern fire proof office building at the corner of Monroe and Clark streets, Chicago. The building will be 13 stories high and it is estimated will cost $700,000. Contract for the steel will not be let for a little time

The Milwaukee Bridge Company, Milwaukee, Wis., have secured contract for a steel bridge over the Minnesota River at St. Peter, Minn., the amount of the contract being $12,500.

### Fires.

Fire in Fred. W. Wolf Company's refrigerating machinery factory, 139 Rees street, Chicago, May 1, caused a loss to machinery and building amounting to about $90,000. The company advise us, however, that a portion of their plant is still in operation and that they will be able to handle such orders as may be received.

The plant of the Gerber Carriage Company, Pittsburgh, Pa., was destroyed by fire May 7, causing a loss of $100,000.

The malting establishment of Francis Perot's Sons and the paper box factory of Schmidt Brothers, Philadelphia, Pa., were destroyed by fire May 9. The loss is placed at $35,000.

The paint shop connected with the foundry of Wm. Adams & Co., Ninth street and Girard avenue, Philadelphia, was badly damaged by fire on the 6th inst.

### Hardware.

The Dobson Mfg. Company, manufacturers of churns, tanks and dairy supplies, Rockford, Ill., are building a foundry, 70 x 170 feet, one story high. Heretofore the company have had their foundry work done by other firms.

The Sanitax Brush Company, Davenport, Iowa, have been incorporated with a capital stock of $25,000, and will manufacture sanitary open metal back bath and hair brushes. The officers of the company are: R. J. Montgomery, president; Theo. Krabbenhoeft, vice-president, and F. A. Hetzel, secretary and treasurer.

The W. L. Gilbert Clock Company, Winsted, Conn., are to erect this season a new building for their case department. The structure will be of brick, four stories high, and 60 x 134 feet on the ground, with a tower 21 x 27 feet for stairways and elevators. The building will replace the wooden structures now occupied by the case department, and at the same time will provide greatly increased manufacturing facilities. The structure is a part of a general building scheme, already begun, of replacing the wooden buildings by buildings as nearly fire proof as it is possible to make them. The new home of the case department, as well as other new buildings contemplated, including the movement department, will be so arranged as to make their extension possible as the demands of the business shall require in the future.

Cobb & Drew, manufacturers of rivets, tacks and nails, Rock Falls, Ill., are building a new factory adjoining their wire mill, which was erected three years ago. Machinery will be supplied from their old factory in the Lawrence Building where they have been located for the past seven years.

Kitselman Bros., Muncie, Ind., have been notified that they have been awarded by the Government a $50,000 contract to furnish wire, nails and other supplies for the Indian reservations.

The Border Bolt & Nut-Lock Company have been incorporated at Richmond, Ind., with $30,000 capital, by Wm. L. Thornburg, John M. Lontz, Wm. A. Alford and Charles C. Border.

### Miscellaneous.

The Federal Brass & Bronze Company, 1133 Broadway, New York, will establish a plant at Hopkins avenue and Dey street, Astoria, Long Island. The equipment has been purchased.

The Pressed Steel Car Company, Pittsburgh, have received an order from the W. H. Piper Coal Company for 150 steel coal cars, and an order from the Logan Coal Company for 100 steel cars.

The New London Iron & Metal Company, New London, Conn., are to erect a brick storehouse, 40 x 60 feet, to replace the building recently destroyed by fire.

The American Emery Wheel Works, Providence, R. I., have reincorporated under the laws of Rhode Island, with a capital stock of $100,000. The rapid growth of their business has compelled them to add largely to their building and equipment, and they have just erected a large addition, which will be devoted entirely to the manufacture of emery and corundum wheels. The new equipment just installed includes 50 horse-power Burlingame engine, 60 horse-power Pennsylvania boiler, 500-ton Elmes hydraulic press, Sprout & Waldron burr mill, and half a dozen special machines of their own make, for mixing and spinning emery and corundum wheels. In the machine shop they have added an 18-inch Prentice engine lathe, a 16-inch Cincinnati shaper, and a 24-inch Barnes upright drill. They are experiencing no falling off in orders and they are running to full capacity.

The Swearingen Mfg. Company, Kansas City, Mo., a newly incorporated company, have purchased the business and assets of the Swearingen Shutter & Iron Works Company. The new company have also leased the factory at Gilliss and First streets and will there manufacture steel roller doors, fire proof shutter doors and allied products. James H. Swearingen is president of the company, A. E. Swearingen is secrtary, and M. B. Peacock, director.

The Athens Mfg. Company, Athens, Ga., manufacturers of yarns, plaids, cottonades, &c., will re-equip their spinning department will new pickers, cards and about 10,000 spindles, which have not yet been purchased.

Alexander H. Revell & Co., Chicago, have rented a large plant on the north branch of the Chicago River and are improving and equipping it with the most modern machinery. The property comprises 3½ acres, on which are three large buildings, covering almost the entire area. The two present factories of the company, at Polk street and Fifth avenue and Wabash and Congress streets, will be consolidated into the new plant, where the company will carry on the manufacture of furniture, bank and office fittings and upholstery.

The W. G. Rowell Company, Bridgeport, Conn., who were incorporated about April 25, with a capital stock of $50,000, suc-

ceed to the brass, bronze and aluminum casting business previously conducted by W. G. Rowell & Co. The new company expect to extend the business, which has increased rapidly the past few years, it having been started about five years ago, when only one man was employed. They now have from 35 to 40 men in their employ, and state that they are well equipped with all modern machinery and tools in both their foundry and finishing shop, and are prepared to handle all kinds of brass work, castings, finishing and special work. They also state that they are in a position to do special valve work and to make fittings for valves. The officers of the new company are: D. W. Rowell, president; Frank S. Hughes, vice-president, and W. G. Rowell, secretary, treasurer and general manager.

The Eriez Stove & Mfg. Company, Erie, Pa., who are to erect a new plant for the manufacture of Eriez gas heaters, gas appliances and sectional burners, have placed orders for the greater part of the equipment, which consists of a 25 horse-power gas engine, Cincinnati drills and tappers, pipe cutters, &c., and which were purchased through the Erie Mfg. & Supply Company. At present the company will not build a foundry, but will let out that work.

The Davis Counterbalanced Locomotive Wheel Company, recently incorporated with a capital stock of $100,000, will be a holding company for the foreign patents which were lately secured. The wheel has been made on a royalty for the past two years in this country. All communications should be addressed to Arthur T. Morey, 218 West 123d street, New York.

The National Cellular Steel Company, recently incorporated with a capital stock of $300,000, for the manufacture of cellular steel for floors and walls of buildings, have leased a plant in Covington, Ky., which they will equip with modern machinery. The company are now building the special machines that are required for forming the steel. The management of the business is in the hands of James M. Rude, whose headquarters are in Covington.

The Warsaw-Wilkinson Company, Warsaw, N. Y., have the contract for furnishing the salt pans, implements and machinery for the establishment of a salt plant near Havana, Cuba. The company are organized with Cuban capital and will produce salt by the evaporation of sea water, the first product of coarse salt being transformed to fine salt by the use of the machinery furnished by the Warsaw Company.

The Minnesota Match Company, recently incorporated at Minneapolis with a capital stock of $500,000, will soon commence the erection of a plant in that city having a capacity for producing 10,000,000 matches per day, and giving employment to over 1000 persons.

The Eagle Point Boat Company are to build a new factory at Dubuque, Iowa, for the manufacture of launches and pleasure boats.

The Madisonville Wagon Works have been incorporated at Madisonville, Ky., with a capital of $15,000, and will construct a plant having a capacity of 300 wagons per day. The incorporators are W. T. Davies, president and general manager, W. L. Brown and C. E. Owen.

The Snyder Automatic Railway Signal Company have been incorporated at Galesburg, Ill., with a capital stock of $20,000, the incorporators being E. J. King of Galesburg, D. M. Snyder and F. S. Marshall of Abingdon, Ill. The company will sell a new railway signaling device, the invention of D. M. Snyder. Provision has been made to have the signal manufactured by others until the demand justifies the erection and equipping of a special plant. D. M. Snyder is president and F. S. Marshall, secretary and treasurer, of the new enterprise.

The Johnston Glass Company, Hartford City, Ind., will install gas producers in the plant when the present fire ends. The Cleiland Glass Company will also put in producers. The Johnston Company will build their own gas plant.

Arrangements are said to have been completed between the American & British Mfg. Company and the Merritt Air Brake Mfg. Company, whereby the former will lease to the latter their large plant at Providence, R. I., which was formerly occupied by the Wheelock Engine Company. Information can be obtained from F. W. Merritt, 25 Southgate street, Worcester, Mass.

The Burke-Bollmeyer Mfg. Company, Wauseon, Ohio, manufacturers of wind mills, will erect a new plant to replace the one damaged by a falling roof recently. The main shop will be 40 x 80 feet, and the supply room 40 x 50 feet. The buildings will be of brick and steel, and will be located at the junction of the Lake Shore and the Detroit Southern railroads.

The Ohio Ceramic Engineering Company, Cleveland, have increased their capital stock from $50,000 to $100,000; Frank Robinson is president and Lloyd Brown secretary. The company are erecting a large plant at Lakewood, on the outskirts of Cleveland.

The Hanney Ventilator Mfg. Company, Cincinnati, with a capital stock of $50,000, were incorporated at Columbus on last Saturday by W. F. Robertson, J. M. Crawford, A. W. Williamson, Wm. R. Collins and Oberst Burbank, all of Cincinnati. They will manufacture ventilators and small novelties of iron and steel. A tract of 5 acres of ground has been purchased at Norwood, where they will erect a two-story brick and steel structure. They are preparing to install an up to date plant, consisting of engines, machine tools, dynamos, &c. It is understood that the work of construction will be hurried to its completion.

The New Haven Webb Company, Centerville, Conn., will erect a one-story brick building, 43 x 185 feet, as an addition to their plant.

The Erie Steam Ballast Company have purchased a site at Huntington, Ind., for a stone crushing plant to cost $50,000.

## Trade Publications.

**Lathes.**—The F. E. Reed Company, Worcester, Mass., have issued a new illustrated catalogue of machine tools from new and improved patterns. The catalogue is of standard size, 6 x 9 inches, and contains about 100 pages. It is completely indexed and divided into the following sections: Amateur screw cutting lathes, standard engine lathes, special turning lathes, hand lathes, plain foot lathes, manual training wood lathes, stud and bolt lathes, turret head chuck lathes, miscellaneous machines, attachments and tools, a friction countershaft and a self oiling hanger, and special machines, including a turret lathe, engine lathe, gun barrel reaming machine, gun barrel lathe, forming lathe, spindle drilling lathe, rack cutter and a shafting lathe.

**Steam and Water Specialties.**—Catalogue No. 9 from the Roe Stephens Mfg. Company, Detroit, Mich., contains a list of standard brass and iron body valves, Scott gate valves, Scott-Rouse swing checks, Scott & Orme pop safety valves, Scott-Jenkins disk, globe, angle and radiator valves, Chicago hot water radiator valves and Goldsmith throttle valves. All the forms are illustrated and accompanied with tables, sizes and prices.

**Shapers.**—Catalogue C from the Cincinnati Shaper Company, Cincinnati, Ohio, is a revised edition of their standard catalogue brought up to date of April, 1904. Among the new features shown in this catalogue is an automatic circular feeding head, designed especially for machining locomotive driving boxes preparatory to forcing in the brasses. The head is shown attached to a regular 24-inch back geared crank shaper. Another new tool is a 24-inch swiveling saddle traverse shaper with separate motor driving each head. This machine was described in *The Iron Age*, February 11, 1904.

**Automobiles.**—The Stevens-Duryea automobile, with two-cylinder opposed type gasoline motor, is described in a catalogue received from the J. Stevens Arms & Tool Company, Chicopee Falls, Mass. One of the distinctive characteristics is the ability to start it from the seat, there being a small crank provided for that purpose attached to the steering post. The motor is of the four-cycle type, but having two cylinders, it gives an impulse for each revolution. It is capable, through its transmission gear, of three speeds forward and a reverse, all of which are operated by a single lever on what is known as the individual clutch system, all gears being constantly in mesh.

**Air Compressors.**—Bulletin L-511, from the Laidlaw-Dunn-Gordon Company, 114 Liberty street, New York City, describes low service compressors for air and carbonic acid gas for pressures of 80 pounds and under. The inlet valves are of the semi-rotary type, and the outlet valves are of the poppet type. Rotary valves are considered superior to poppet valves for inlets because of greater efficiency, durability, and the fact that they open promptly with little resistance to the incoming air. Valves of the poppet type are best adapted for the discharge, as the point of opening varies, as it should, with variations in pressure.

NOTES.

The John R. Williams Company, Newark, N. J., are distributing a brochure of the McCaffrey patent self oiling dust proof loose pulley. The lubricating oil is supplied from a reservoir around the hub which holds enough oil to run from 30 days to 30 months, depending upon the size of the reservoir and the service for which the pulley is intended.

The Pratt & Whitney Company, Hartford, Conn., are distributing a leaflet on a new thread milling machine, a tool intended to replace the lathe in the cutting of threads and worms. They are built in five sizes, 6 x 14, 6 x 48, 6 x 80, 6 x 132 and 12 x 36 inches.

The Niles-Bement-Pond Company, 136-138 Liberty street, New York City, with April began the publication of "The Progress Reporter," which they purpose to issue every few weeks as interesting new matter accumulates, the object being to show the new machines and devices which they are constantly bringing out. The first copy contains a description of a 48-inch double planer and 60-inch double rotary planer, a hydraulic bar shear, a new hydraulic punching machine, a horizontal milling machine, a 68-inch geared slotting machine, a new model turret lathe, a 400-ton hydraulic wheel press, a Corliss cylinder boring machine and an improved flue beading tool.

The Stephens-Adamson Mfg. Company, Aurora, Ill., describe their plain mounted carriers and pedestal carriers for belt conveyors in bulletin No. 10. This bulletin is a supplement to their general catalogue No. 7, and conforms to the style of the catalogue in that the devices are illustrated in half-tone for the general effect and by line engravings showing longitudinal and transverse sectional views, and all dimensions are given in tables at the bottom of each page, referring to letters on the sectional views.

# The Iron and Metal Trades

April has been a month of very heavy production of Pig Iron, and that more particularly on the part of the Steel companies. According to our monthly blast furnace statistics the output of Coke and Anthracite Pig Iron was 1,553,706 tons in April, as compared with 1,447,065 tons in March, 921,231 tons in January and 846,695 tons in December. The Steel companies are responsible for the greater part of this increase, the product having risen from 502,994 tons in January to 913,412 tons in March and 974,006 tons in April, leaving for the outside merchant furnaces 416,237 tons in January, 552,095 tons in March and 579,700 tons in April. In spite of this increased production on the part of the merchant furnaces they have reduced their stocks during April from 457,913 to 444,059 tons. This decrease has taken place chiefly in the Central West, while the stocks held at Southern furnaces show practically no change, and the Eastern stocks have accumulated a little. Statistically, therefore, there has been a modest improvement during April, and direct and convincing evidence is furnished in proof of the fact that consumption is going along on an exceedingly satisfactory scale. Whether it will expand further in the near future, to take care of the sharply augmented rate of production, is another question concerning which doubts will naturally arise.

The Iron industry will face with equanimity any stoppage of Ore shipments as the result of a strike or a lockout of the lake vesselmen. According to special reports there are now in stock at the blast furnaces which consume lake Ores over 6,000,000 tons of Ore, of which a little more than one-quarter is non-Bessemer Ore, the balance being Bessemer Ore.

The volume of new business which is coming to Pig Iron makers has been decidedly light of late and the markets are showing a weakening tendency. The foundries themselves do not seem to be securing much new tonnage. The largest contract taken during the past week has been that of 29,000 tons of Water Pipe for Cincinnati, which was secured by the United States Cast Iron Pipe & Foundry Company, at prices ranging between $24.45 and $26.85. The Wheeling Mold & Foundry Company, which took one-half of the 65,000 tons of Castings for the Pennsylvania tunnel, have given an option up to June 1 to the contractor on any part or the whole of the second half.

In nearly all lines of Finished Iron and Steel the current demand is light and buyers are acting very conservatively. There are indications that the spring rush, accompanied by the filling up of broken stocks on the part of dealers and merchants, is over in those branches in which they played so important a *rôle* during the past three months. This is particularly true of Sheets, Pipe, Wire and Bars.

There are, of course, quite a number of very large undertakings in sight, like the new Manhattan Bridge, which will call for 40,000 tons of Steel, but this tonnage naturally comes out only gradually.

Speaking generally, the trade seems to be drifting rapidly into the conviction that we are to have a pretty quiet summer.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | May11, 1904. | May4, 1904. | Apr.13, 1904. | May13, 1903. |
|---|---|---|---|---|
| **PIG IRON:** | | | | |
| Foundry Pig No. 2, Standard, Philadelphia | $15.00 | $15.00 | $15.00 | $20.25 |
| Foundry Pig No. 2, Southern, Cincinnati | 12.50 | 12.50 | 12.50 | 19.25 |
| Foundry Pig No. 2, Local, Chicago | *13.75* | 14.00 | 14.00 | 20.00 |
| Bessemer Pig, Pittsburgh | *13.60* | 13.85 | 14.35 | 20.00 |
| Gray Forge, Pittsburgh | *12.75* | 12.50 | 13.25 | 19.75 |
| Lake Superior Charcoal, Chicago | *15.00* | 15.00 | 15.25 | 24.00 |
| **BILLETS, RAILS, &c.:** | | | | |
| Steel Billets, Pittsburgh | 23.00 | 23.00 | 23.00 | 30.50 |
| Steel Billets, Philadelphia | *24.25* | 25.00 | 25.00 | 28.50 |
| Steel Billets, Chicago | 24.00 | 24.00 | 24.00 | 32.50 |
| Wire Rods, Pittsburgh | *30.50* | 30.50 | 31.00 | 37.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL:** | | | | |
| O. Steel Rails, Chicago | *11.00* | 11.00 | 11.50 | 18.25 |
| O. Steel Rails, Philadelphia | *12.50* | 13.00 | 15.00 | 21.50 |
| O. Iron Rails, Chicago | *16.50* | 17.00 | 17.00 | 24.00 |
| O. Iron Rails, Philadelphia | *17.00* | 17.25 | 18.50 | 24.50 |
| O. Car Wheels, Chicago | *13.00* | 14.00 | 14.00 | 23.00 |
| O. Car Wheels, Philadelphia | *12.00* | 12.00 | 13.50 | 24.00 |
| Heavy Steel Scrap, Pittsburgh | *12.00* | 13.00 | 13.75 | 21.50 |
| Heavy Steel Scrap, Chicago | *10.00* | 10.00 | 11.50 | 18.25 |
| **FINISHED IRON AND STEEL:** | | | | |
| Refined Iron Bars, Philadelphia | 1.48½ | 1.48½ | 1.48½ | 1.85 |
| Common Iron Bars, Chicago | *1.45* | 1.45 | 1.50 | 1.80 |
| Common Iron Bars, Pittsburgh | *1.35* | 1.35 | 1.40 | 1.85 |
| Steel Bars, Tidewater | 1.49½ | 1.49½ | 1.49½ | 1.75 |
| Steel Bars, Pittsburgh | 1.35 | 1.35 | 1.35 | 1.60 |
| Tank Plates, Tidewater | 1.74½ | 1.74½ | 1.74½ | 1.80 |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.60 |
| Beams, Tidewater | 1.74½ | 1.74½ | 1.74½ | 1.73½ |
| Beams, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.60 |
| Angles, Tidewater | 1.74½ | 1.74½ | 1.74½ | 1.73½ |
| Angles, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.60 |
| Skelp, Grooved Steel, Pittsburgh | 1.35 | 1.35 | 1.35 | 2.05 |
| Skelp, Sheared Steel, Pittsburgh | 1.35 | 1.35 | 1.35 | 2.10 |
| Sheets, No. 27, Pittsburgh | *2.10* | 2.10 | 2.15 | 2.65 |
| Barb Wire, f.o.b. Pittsburgh | 2.50 | 2.50 | 2.50 | 2.60 |
| Wire Nails, f.o.b. Pittsburgh | 1.90 | 1.90 | 1.90 | 2.00 |
| Cut Nails, f.o.b. Pittsburgh | 1.75 | 1.75 | 1.75 | 2.15 |
| **METALS:** | | | | |
| Copper, New York | 13.37½ | 13.37½ | 13.12½ | 14.75 |
| Spelter, St. Louis | *5.00* | 5.00 | 5.05 | 5.40 |
| Lead, New York | 4.50 | 4.50 | 4.50 | 4.37½ |
| Lead, St. Louis | *4.35* | 4.40 | 4.42½ | 4.22½ |
| Tin, New York | *27.60* | 27.95 | 27.87½ | 29.65 |
| Antimony, Hallett, New York | 7.25 | 7.25 | 7.25 | 7.00 |
| Nickel, New York | 40.00 | 40.00 | 40.00 | 40.00 |
| Tin Plate, Domestic, Bessemer, 100 pounds, New York | 3.64 | 3.64 | 3.64 | 3.89 |

## Chicago.

FISHER BUILDING, May 11, 1904.—(*By Telegraph.*)

Whatever change can be noted in the situation as compared with last week is a change for the worse. Pig Iron, both Northern and Southern, is selling at 25c. lower than a week ago, or, to be more accurate, it is offered at the lower prices, as sales are few and far between. Billets are inactive. Standard Section Rails are almost without purchasers, if we may except a small lot of 2000 tons bought by the Illinois Tunnel Company for their tunnels under the streets. Structural Materials outside of the large buildings are quiet. Rector's new building, requiring 2500 tons of Structural Steel, was placed with the leading producers. Plates are in about the same condition as heretofore. Sheets are badly disorganized and association prices are being cut quite generally. Pipe is regaining a little of its lost activity and Boiler Tubes are in about the same slow demand as they have been for a number of weeks. Cast Iron Pipe buyers are waiting for lower prices, in consequence of weakness in Pig Iron. Old Materials have decreased 50c. per ton on more than half the leading lines on the list. Coke is crowding the tracks, with no perceptible relief in the way of sales. Notwithstanding all these discouraging facts there is a disposition on the part of the trade to look forward to better things in the not far future.

**Pig Iron.**—The continued rumors of $9.75 Southern Iron that have been in the air for the last two or three weeks have taken definite form in the shape of a public announcement of that price by one of the large producers, which was promptly met by some others. There are still a number of Southern furnaces that refuse to sell a pound of Iron for less than the $10 basis. The demand for Gray Forge, Mottled and White Irons is rather greater than for the better

grades, as furnaces in the South have been turning out a smaller average of the low grades of Iron than usual and buyers of these grades have had some difficulty in securing their tonnages of the low grades. Northern Iron has suffered in sympathy with Southern, and while last week we left the minimum price indeterminate this week we make it 25c. lower than the maximum of last week. Almost the whole line, in fact, has suffered a reduction of 25c. per ton. While the disagreement among Ore producers, which has been given so much publicity, was long ago discounted in prices of Northern Iron, the discussion of the Ore problem has been so unusually widely distributed that buyers of Iron have been able by main strength to bear the market in consequence. No new developments have transpired in the deadlock between vessel owners and the masters' and pilots' association or union, though it is hoped that before another week passes by some settlement may be arrived at. We quote as follows:

| | |
|---|---|
| Lake Superior Charcoal | $15.00 to $15.50 |
| Northern Coke Foundry, No. 1 | 14.25 to 14.50 |
| Northern Coke Foundry, No. 2 | 13.75 to 14.00 |
| Northern Coke Foundry, No. 3 | 13.25 to 13.50 |
| Northern Scotch, No. 1 | .... to 14.50 |
| Ohio Strong Softeners, No. 1 | 15.30 to 15.55 |
| Ohio Strong Softeners, No. 2 | 14.80 to 15.05 |
| Southern Silvery, according to Silicon | 14.65 to 15.65 |
| Southern Coke, No. 1 | 13.90 to 14.15 |
| Southern Coke, No. 2 | 13.40 to 13.65 |
| Southern Coke, No. 3 | 12.90 to 13.15 |
| Southern Coke, No. 4 | 12.40 to 12.65 |
| Southern Coke, No. 1 Soft | 13.90 to 14.15 |
| Southern Coke, No. 2 Soft | 13.40 to 13.65 |
| Southern Gray Forge | 12.35 to 12.65 |
| Southern Mottled and White | 11.90 to 12.40 |
| Malleable Bessemer | 14.00 to 14.25 |
| Standard Bessemer | 15.30 to 15.80 |
| Jackson County and Kentucky Silvery, 6 to 10 per cent. Silicon | 16.80 to 18.30 |
| Alabama Basic | 13.40 to 13.65 |
| Virginia Basic | 14.40 to 14.65 |

**Billets.**—The Billet business is quiet, but while there is a good deal of talk about price cutting, no producer or mill agent in this territory can be found who will acknowledge that pool prices are not being strictly maintained. Prices are unchanged on the basis of: Forging Billets, 4 x 4 and larger, $24 per gross ton, Chicago, in carload lots; Axle Billets and Billets smaller than 4 x 4, $25.

**Rails and Track Supplies.**—This has been a quiet week, both in Standard Section and Light Section Rails. The only sale of note was one of 2000 tons of 56-lb. Rails to the Illinois Tunnel Company for laying over 20 miles of track under the streets of Chicago. These Rails will be set in concrete on cradles. Cradles have not yet been purchased. Standard Section Rails are still on the $28 basis and Light Sections are now being quoted at from $23 to $26 per ton. The former lines of price demarcation between sizes are almost obliterated, and the price is more dependent upon tonnage than upon the weight of the section. Standard Section Rails, $28 per ton for 500-ton lots and greater; Light Rails, $25 to $27 per ton. Angle Bars are still quoted at 1.40c. to 1.50c., Spikes at 1.65c. to 1.75c., base, while Track Bolts have been reduced to 2.30c. to 2.35c., base, with Square Nuts, and 10c. to 15c. extra for Hexagon Nuts.

**Structural Material.**—Steel for Rector's new building aggregating about 2500 tons was placed with the American Bridge Company. This makes the sixth large downtown office building the Steel for which was placed with that factor. Aside from these large buildings, business in Structural Steel in Chicago has been most unsatisfactory, and there seems to be no relief in sight. It is true that a fair pick up business in car lots, 50-ton lots and 100-ton lots is being booked from various points in the West and Northwest, and the wide geographical distribution of these orders gives some promise of a continuation of business of this character throughout the season. Prices are unchanged both from mill and store, as follows: I-Beams and Channels up to and including 15 inches and Angles 3 inches on one leg and larger, 1.76½c., Chicago; Tees, $1 per ton extra. Store prices on Structurals are as follows: Angles, Beams, Channels and Zees, base sizes, 2c. to 2.10c.; Tees, 2.05c. to 2.15c., either random lengths or cut to lengths 5 feet and over.

**Plates.**—Some Plate business is being done every day, but it is of a strictly hand to mouth character and unsatisfactory to the mills. The leading Western mill is still in operation, getting just about enough orders from week to week to keep its rolls turning. One independent producer is selling at or below 1.70c., Chicago, on ¼-inch and heavier for Plate 60 inches wide and narrower, and enough business is being obtained by this mill at the reduced prices to keep it in operation. A feature of the Plate business is that orders which would ordinarily require from two weeks to several months to execute are now executed in two or three days. Prices are as follows: Tank Steel, ¼-inch and heavier, 1.76½c.; Flange Steel, 1.86½c.; Marine, 1.96½c.; Universal Mill Plate, 1.76½c. to 1.81½c.; 3-16 inch Tank, 1.86½c.; Nos. 7 and 8, 1.91½c.; No. 9, 2.01½c.; No. 10, 1.91½c. to 1.96½c.; No. 11, 1.96½c. to 2.01½c.; No. 12, 2.01½c. to 2.06½c. Store prices are as follows: Tank Plate, 100 inches wide or less, ¼-inch and heavier, 2c. to 2.10c.; 3-16 inch, 2.10c. to 2.15c.; Nos. 8 and 10, 2.10c. to 2.20c.; Flange quality, 25c. per 100 lbs. extra.

**Sheets.**—This is a badly demoralized market, and the situation seems to grow worse instead of better. It seems to be pretty generally understood here that a number of Pennsylvania mills who secured reduction of their labor cost from the Amalgamated Association are now giving away this saving to the trade, leaving the producers in as bad a shape as they were before as far as profits are concerned. The reduction in question seems to amount to $1 to $2 per ton below association prices. Inasmuch as association prices are still maintained by a number of mills, we indicate a range of prices to include both classes of producers, as follows, carload lots, from mill, f.o.b. Chicago: Nos. 9 and 10, 1.96½c. to 2.01½c.; Nos. 12 to 14, 2.06½c. to 2.11½c.; Nos. 15 to 17, 2.11½c. to 2.16½c.; Nos. 18 to 21, 2.16½c. to 2.21½c.; Nos. 22 to 24, 2.21½c. to 2.26½c.; Nos. 25 and 26, 2.21½c. to 2.31½c.; No. 27, 2.26½c. to 2.36½c.; No. 28, 2.36½c. to 2.46½c.; No. 29, 2.56½c. to 2.61½c.; No. 30, 2.71½c. to 2.76½c. The store prices on Sheets show but little change and are as follows: No. 8, 2.10c.; No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; No. 18, 2.45c.; No. 20, 2.50c.; No. 22, 2.55c.; No. 24, 2.60c.; No. 26, 2.65c.; No. 27, 2.75c.; No. 28, 2.80c.; No. 29, 2.95c.; No. 30, 3.10c. Galvanized Sheets are still quoted at from 80 to 80 and 5 discount, Pittsburgh, in car lots. Store prices on Galvanized Sheets remain unchanged at 75 and 7½ to 75 and 10 per cent. discount.

**Bars.**—Iron Bars were sold here last week as low as 1.40c., base, half extras, in car lots, but as the disturbing factor in the market is said to have loaded up with sufficient tonnage to last until about August 1, there is a tendency sufficiently strong to warrant us in quoting Bar Iron at 1.45c., with the reservation that desirable specifications might be placed at $1 per ton less. Steel Bars and Bands are firm at 1.51½c., base, half extras, Chicago, in car lots. Steel Hoops are quiet and unchanged in price at 1.56½c. rates, full extras, Chicago, in carload lots. Store prices are unchanged, as follows: Iron Bars, 1.75c., base, full extras; Steel Bars, 1.70c. to 1.80c., base, half extras; Hoops, 2.10c. rates, full extras.

**Merchant Steel.**—Contracts are being closed with implement manufacturers for delivery of their requirements up to July, 1905, in most lines the contracts stipulating that mills shall guarantee prices against decline. Specifications on this year's contracts are growing lighter as the season advances, but are, if anything, a little heavier than ordinarily, because of the backwardness of the season. A great deal of Shafting has been sold in this market in the last three months, and while there is the usual undercurrent of charges of price cutting, it is probable that few if any concessions have been made by members of the Shafting Association. Prices remain unchanged, as follows: Open Hearth Spring Steel to the general trade, 2c. to 2.25c.; Smooth Finished Machinery Steel, 1.76½c. to 1.81½c.; Smooth Finished Tire, 1.71½c. to 1.76½c.; Sleigh Shoe, flat, 1.56½c. to 1.61½c.; Sleigh Shoe, concave and convex, 1.66½c. to 1.71½c.; Cutter Shoe, 2.25c. to 2.35c.; Toe Calk Steel, 2.06½c. to 2.11½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots.

**Merchant Pipe.**—Orders from jobbers in the country indicate that the consumptive demand has reached a point where it is beginning to make bare spaces in stock racks, and mills are usually called upon by jobbers to make quick shipment to supply missing sizes. If this should prove to be a dry season the Pipe mills will have all they can do to keep up with the growing demand for Iron and Steel Merchant Pipe. Prices are unchanged, as follows:

| | Steel Pipe. Black. Per cent. | Steel Pipe. Galv. Per cent. | Guar. Wr'ght Iron. Black. Per cent. | Guar. Wr'ght Iron. Galv. Per cent. |
|---|---|---|---|---|
| ⅛ to ⅜ inch | 66.35 | 56.35 | 64.35 | 54.35 |
| ½ inch | 69.35 | 59.35 | 67.35 | 57.35 |
| ¾ to 6 inches | 73.35 | 63.35 | 71.35 | 61.35 |
| 7 to 12 inches | 69.35 | 59.35 | 66.35 | 56.35 |

Less than carloads, 12½ per cent. advance.

**Boiler Tubes.**—The increase in the demand for Tubes noted last week is still discernible, though not marked. So apathetic are buyers that special offers widely made by one interest of several cars of 3½-inch Steel Tubes at almost the price of Pipe failed to move the Tubes. The official prices of the leading producer are as follows:

| | Steel. | Iron. | Seamless steel. |
|---|---|---|---|
| 1 to 1½ inches | 43.35 | 40.80 | 53.35 |
| 1¾ to 2¼ inches | 55.85 | 38.35 | 40.35 |
| 2½ inches | 58.35 | 43.35 | 40.35 |
| 2¾ to 5 inches | 64.35 | 50.85 | up to 4 in. 48.35 |
| 6 to 13 inches | 55.85 | 38.35 | .... |

Local jobbers persuade themselves that the Boiler Tube business is slowly improving. Agreed discounts for shipment from store, Chicago, are as follows:

| | Steel. | Iron. | Seamless. steel. |
|---|---|---|---|
| 1 to 1½ inches | 40 | 35 | 37½ |
| 1¾ to 2½ inches | 50 | 32½ | 35 |
| 2¾ to 5 inches | 60 | 45 | 45 |
| 6 inches and larger | 50 | 32½ | .. |

**Cast Iron Pipe.**—No contracts of any note have been closed during the week under review, and the weakness of Pig Iron is leading Pipe buyers to hold off until they shall have seen what they consider the bottom of the market. Prices are unchanged, but must be considered largely nominal at the following figures: $27 for 4-inch Water Pipe, $26 for 6 to 12 inch and $25 for larger than 12-inch, with $1 extra for Gas Pipe.

**Old Materials.**—With the exception of Iron Fish Plates, which have advanced 25c., prices on Old Materials are either stationary or have receded from last week's quotations to the extent of 50c. per ton. Movement is sluggish and there is indication that railroads may try the experiment of holding to their materials for a week or two in the hope of putting a stop to the sagging of prices. A fair representation of prices received by railroads for their material in carload lots is as follows, per gross ton, Chicago:

| | |
|---|---|
| Old Iron Rails | $16.50 to $17.00 |
| Old Steel Rails, 4 feet and over | 12.00 to 12.50 |
| Old Steel Rails, less than 4 feet | 11.00 to 11.50 |
| Heavy Relaying Rails, subject to inspection | 23.00 to 24.00 |
| Heavy Relaying Rails, for side tracks | 18.00 to 20.00 |
| Old Car Wheels | 13.00 to 14.00 |
| Heavy Melting Steel Scrap | 10.00 to 10.50 |
| Mixed Steel | 9.00 to 10.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $13.75 to $14.25 |
| Iron Car Axles | 17.00 to 17.50 |
| Steel Car Axles | 15.50 to 16.00 |
| No. 1 Railroad Wrought | 11.50 to 12.00 |
| No. 2 Railroad Wrought | 10.00 to 11.00 |
| Shafting | 13.50 to 14.00 |
| No. 1 Dealers' Forge | 9.25 to 10.00 |
| Wrought Pipe and Flues | 8.00 to 8.50 |
| Iron Axle Turnings | 8.00 to 8.50 |
| Soft Steel Axle Turnings | 8.00 to 8.50 |
| Machine Shop Turnings | 7.25 to 7.50 |
| Cast Borings | 4.50 to 5.00 |
| Mixed Borings, &c | 4.50 to 5.00 |
| No. 1 Mill | 7.50 to 7.75 |
| Country Sheet | 7.00 to 7.25 |
| No. 1 Boilers, cut in Sheets and Rings | 9.00 to 9.50 |
| Heavy Cast Scrap | 10.50 to 11.00 |
| Stove Plate and Light Cast Scrap | 9.00 to 9.50 |
| Railroad Malleable | 10.00 to 10.50 |
| Agricultural Malleable | 8.50 to 9.00 |

**Metals.**—Nothing has occurred to relieve the dullness of the Metal business. Copper is unchanged at 13½c. for Casting and 13¾c. for Lake. Pig Tin has been reduced about ¼c., being now quoted at 29¼c. to 29⅜c. Pig Lead is still sold at 4.45c. for 50-ton lots, but car lots now go at 4.55c., and smaller lots at about 4.75c. Spelter in car lots is quoted at from 5.15c. to 5.20c., and in less than car lots from 5.35c. to 5.50c. Sheet Zinc is unchanged at 6.20c. for car lots of 600-lb. casks and 6.45c. to 6.50c. on less than car lots. Old Metals, with the exception of Zinc, are dull, with prices of Copper and Brass lower. Sheet Zinc is 1-5c. higher. We quote: Copper Wire and Heavy, 11¾c.; Copper Bottoms, 10⅝c.; Copper Clips, 11¼c.; Red Brass, 10½c.; Red Brass Borings, 8⅞c.; Yellow Brass, Heavy, 8⅜c.; Yellow Brass Borings, 6⅝c.; Light Brass, 5¾c.; Tea Lead, 4c.; Zinc, 3.95c.; Pewter, No. 1, 18½c.; Block Tin Pipe, 24c.

**Coke.**—There is no denying that the Coke business in this market is in a wretchedly unsatisfactory condition. Accredited representatives of Connellsville Cokes will insist that their prices are $2 to $2.50, Connellsville, or $4.65 to $5.15, Chicago, for 72-hour Foundry grade. But there is such a large tonnage of Foundry Cokes offered at from $4.15 to $4.40, Chicago, that the volume of sales closed at the higher prices is extremely small. The tonnage of Coke now on track subject to demurrage seems to be increasing rather than diminishing.

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Garson Myers, late manager of the agricultural department of the Crucible Steel Company of America, at Chicago, has established his permanent Chicago office for the sale of Iron and Steel at 320 Merchants' Loan & Trust Company Building, whither he has just moved from his temporary office in the Monadnock Block.

## Philadelphia.

FORREST BUILDING, May 10, 1904.

The Iron and Steel situation is assuming a very unfavorable appearance, which at this season of the year is particularly disappointing. Various reasons are advanced to explain the dullness and the apathy, but no single influence can be made responsible, as it is due to a combination of circumstances, rather than to any particular condition. Of course, the leading feature is the lack of demand, which is due to the inability or the unwillingness of large consumers to place orders. Then there is the uncertainty in regard to crops, to labor and to the Presidential election, none of which may prove to be very serious as an ultimate outcome, but temporarily they restrict operations to immediate wants, beyond which it is impossible to do business of any magnitude. Inquiries for material are in large volume, and if one-half of them develop into actual business there will be no scarcity of work during the last half of the year, but they seldom amount to anything, so that confidence in regard to immediate business is sadly lacking. Prices hold remarkably well considering the dullness, but it is reasonably certain that unless there is more business there will be lower prices, and how far this will go if a decline begins is hard to say. The volume of business in all lines has shrunk amazingly, and while most of the mills and furnaces have some business on their books for May and June, they have little beyond that, and the prospects for renewals are far from being favorable. The impression is that the inactivity is not because of inherently bad conditions, but due to a combination of circumstances which may retard business for several months to come, but at later date may develop another period of prosperity; though, this, of course, is subject to a satisfactory conclusion of the various influences above referred to.

**Pig Iron.**—The Pig Iron market is virtually dead. There is very little demand for either spot or deferred shipments, and from the absolute indifference that prevails it might be supposed that everybody was going out of business. Sellers are not crowding the market at all and, as they say, it would not help matters if they did. Those who want a little Iron take it at quoted rates, but those whose needs are covered until midsummer would hardly consider the question of a purchase at any price; so that there is no alternative but to wait until buyers are disposed to do business. At the moment it is not a question of prices, although that will be an important consideration when business comes up. For such quantities as buyers are willing to take to-day's figures would be $15 to $15.25, delivered, for No. 2 X Foundry, or $13.50 for Standard Mill Irons; but what they will be when orders are ready to be placed for deliveries during the last half of the year is yet to be seen. The impression is that there will be a considerable decline before prices touch bottom, although it may not come all at once, but conditions are such that it is pretty sure that the decline this time will go far enough to put a good many furnaces out of blast, and until that is assured prices are not likely to improve. To-day's prices are nominally the same as last week, but no large business could be done unless at more or less of a reduction. A fair average would be about as follows for deliveries in buyers' yards, Philadelphia or nearby points:

| | |
|---|---|
| No. 1 X Foundry | $15.50 to $15.75 |
| No. 2 X Foundry | 15.00 to 15.25 |
| No. 2 Plain | 14.50 to 14.75 |
| Alabama No. 2, rail shipment | 14.25 to 14.50 |
| Alabama, No. 2, on dock | 13.50 to 13.75 |
| Standard Gray Forge | 13.50 to 13.75 |
| Ordinary Gray Forge | 13.00 to 13.25 |
| Basic | 13.75 to 14.00 |

**Steel.**—There is a fair day to day business, but large orders are not on the market at the moment. Prices range from $24.25 upward, according to quantity and quality requirements.

**Plates.**—There is a good inquiry for Plates, but the resultant business is extremely disappointing. Some of the largest consuming interests are doing very little, and prospects of improvement are not at all good, but in some lines where work could be had the attitude of labor is a bad handicap. The Boiler and building trades are the chief sufferers at the present time, but the same influence permeates all departments more or less, and until it is removed there is but little chance of any great activity. Prices are maintained as last quoted, viz.:

| | Carloads. Cents. | Part carloads. Cents. |
|---|---|---|
| Tank Steel, ¼ inch and heavier | 1.73½ | 1.78½ |
| Tank Steel, 3-16 inch | 1.83½ | 1.88½ |
| Tank Steel, Nos. 7 and 8, B. W. G. | 1.88½ | 1.93½ |
| Tank Steel, Nos. 9 and 10, B. W. G. | 1.98½ | 2.03½ |
| Flange or Boiler Steel | 1.83½ | 1.88½ |
| Commercial Fire Box Steel | 1.93½ | 1.98½ |
| Still Bottom Steel | 2.03½ | 2.08½ |
| Locomotive Fire Box Steel | 2.23½ | 2.28½ |
| Plates over 100 to 110 inches | .05 per lb. extra | |
| Plates over 110 to 115 inches | .10 | " |
| Plates over 115 to 120 inches | .15 | " |
| Plates over 120 to 125 inches | .25 | " |
| Plates over 125 to 130 inches | .50 | " |
| Plates over 130 inches | 1.00 | " |
| All sketches (excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches) | .10 | " |
| Complete Circles | .20 | " |
| Shell grade of Steel abandoned. | | |

**Structural Material.**—The remarks in regard to the Plate trade apply equally to the Structural interests, so that no further comment need be made, except that there is plenty of business in sight and all it needs is a fair chance for development. Prices unchanged: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.50c. to 1.55c.

**Bars.**—This interest is in rather bad condition at the present time. Mills are fairly busy, but a great deal of the work is on low priced contracts, so that there is nothing in it to the manufacturer. Consumers are buying in small lots, as a rule, so that most of the business is from second hands and comprises material sold by the mills at lower prices than those of to-day. This applies to both Iron and

Steel Bars, which are quoted at 1.48½c. to 1.55c., delivered, according to quantity and quality.

**Sheets.**—There is no demand for forward deliveries, but the run of business for immediate requirements is fair. The only disagreeable feature is the uncertainty of its continuance.

**Old Material.**—The market has flattened out to such an extent that it is hard to say what prices are, but they are lower than they were a week ago, with little or no demand at that. As near as can be given to-day, bids and offers for deliveries in buyers' yards would be about as follows:

| | |
|---|---|
| No. 1 Steel Scrap | $12.50 to $13.00 |
| Low Phosphorus Scrap, nominal | 17.50 to 18.00 |
| Old Steel Axles | 16.00 to 17.00 |
| Old Iron Rails | 17.00 to 17.50 |
| Relaying Rails | 21.00 to 22.00 |
| Old Iron Axles | 20.00 to 21.00 |
| Old Car Wheels | 12.00 to 13.00 |
| Choice Scrap, R. R. No. 1 Wrought | 17.00 to 17.50 |
| Yard Scrap | 14.00 to 14.50 |
| Machinery Scrap | 12.50 to 13.00 |
| No. 2 Forge Fire Scrap | 12.00 to 13.00 |
| No. 2 Forge Fire Scrap (Ordinary) | 10.00 to 10.50 |
| Wrought Turnings | 9.50 to 10.00 |
| Axle Turnings, Choice Heavy | 10.50 to 11.00 |
| Cast Borings | 7.00 to 7.25 |
| Stove Plate | 10.00 to 10.50 |
| Wrought Iron Pipe | 11.00 to 11.50 |

## Cincinnati.

FIFTH AND MAIN STS., May 11, 1904.—(*By Telegraph.*)

**Pig Iron.**—It is an exceedingly difficult thing to say anything that can be classed as interesting. The market is about s quiet as it can possibly be and still retain its identity as a market. The general tone has developed a somewhat weaker tendency and conditions are unsettled to a marked degree. It is understood that several Southern furnaces are still holding firm at $10, but the prevailing price is undoubtedly $9.75, Birmingham basis, for No. 2. Sellers are complaining generally of the almost dearth of any buying movement, small lots being the rule, with no large inquiries in sight. Some sellers are fairly well pleased with conditions and report that while small transactions have characterized the past week, the volume, taken as a whole, is far from inconsiderable. The scarcity of Gray Forge and No. 4 Foundry is still very marked, probably largely due to the fact that many Northern furnaces have reduced their output of these grades very materially. There was only one bidder for the Pipe required for the new plant of the Cincinnati Water Works, the United States Cast Iron Pipe & Foundry Company, whose bids were $26.85 per ton for 11,000 tons (7500 tons of which are to be 60-inch Pipe), and $25.45 for 18,000 tons of smaller Pipe. Their bids were greatly in excess of the estimate of the engineer and have been referred to the advisory engineer for report, which, it is expected, will be ready by to-morrow. A meeting of the furnacemen of the central district was held at Cleveland, Ohio, May 4, at which they organized "The Iron Men's Club," electing the following officers: Col. J. G. Battelle, president; D. B. Meacham, vice-president; Linn Bentley, secretary and treasurer. This organization is not for the maintenance of prices, but for the purpose of becoming better acquainted and for mutual benefit. They will meet at Columbus on the first Wednesday of each month. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.75. We quote, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $13.00 to $13.25 |
| Southern Coke, No. 2 | 12.50 to 12.75 |
| Southern Coke, No. 3 | 12.00 to 12.25 |
| Southern Coke, No. 4 | 11.50 to 11.75 |
| Southern Coke, No. 1 Soft | 13.00 to 13.25 |
| Southern Coke, No. 2 Soft | 12.50 to 12.75 |
| Southern Coke, Gray Forge | 11.50 to 11.75 |
| Southern Coke, Mottled | 11.25 to 11.50 |
| Ohio Silvery, No. 1 | 16.15 to 16.40 |
| Lake Superior Coke, No. 1 | 14.15 to 14.40 |
| Lake Superior Coke, No. 2 | 13.65 to 13.90 |
| Lake Superior Coke, No. 3 | 13.15 to 13.40 |

*Car Wheel and Malleable Irons.*

| | |
|---|---|
| Standard Southern Car Wheel | $17.00 to $17.50 |
| Lake Superior Car Wheel and Malleable | 17.00 to 17.50 |

**Coke.**—There is very little doing in the line of Coke shipments. Consumers are well supplied for the present, and only small lots are in demand. We quote, f.o.b. ovens Connellsville, $1.75 to $2.25.

**Plates and Bars.**—Demand for this class of material during the past week has been very slight. Dealers are expecting in the near future quite a large demand for Structural Iron, as the proposed viaducts which are being figured on are a certainly assured fact. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.40c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.48c., with half extras; the same in smaller lots, 1.80c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 2c.; Sheets, 16-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 5-16 and heavier, 1.68c., in carload lots.

**Old Material.**—There seems to be some difficulty in establishing just what the market is for this class of material, as dealers differ as to prices. All agree, however, on this one fact, that trade is abnormally quiet and dull. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $11 to $11.50 per net ton; No. 1 Cast Scrap, $9.25 per net ton; Iron Rails, $14.50 per gross ton; Steel Rails, rolling mill lengths, $11 to $11.50 per gross ton; Iron Axles, $15 per net ton; Car Wheels, $11 to $11.50 per gross ton; Heavy Melting Scrap, $11.50 per gross ton; Low Phosphorus Scrap, $11.50 to $12 per gross ton.

## Pittsburgh.

PARK BUILDING, May 11, 1904.—(*By Telegraph.*)

**Pig Iron.**—The Pig Iron market continues exceedingly quiet and not enough metal is being sold to establish prices. Indications point to lower prices on Pig Iron, and consumers are buying only what they actually need for immediate use. Bessemer Iron is held at $12.75 to $13, Valley, a sale of 1000 tons being reported at $12.75 for ordinary Bessemer and 1500 tons at $12.85 for Chilled Bessemer. Northern Gray Forge Iron is about $12.75, Pittsburgh, and we note a sale of 500 tons at that price. Northern No. 2 Foundry is held at about $12.50, Valley, or $13.35, Pittsburgh, but on a firm offer and for any extended delivery it is probable that a lower price would be made. The outlook is that the Pig Iron market will be very quiet for some time to come.

**Steel.**—There is very little new buying of Steel, and reports are that the official price of $23, Pittsburgh, is being shaded in various ways. The supply of Sheet and Tin Bars is pretty well controlled by the leading interest, and prices are fairly firm. The official price of Long Sheet and Tin Bars is $24, Pittsburgh, and on Cut Bars $24.50; but some consumers of Sheet and Tin Bars buy on sliding scale contracts, thus securing their Bars at somewhat less than the above prices.

(*By Mail.*)

The business of the week under review has been light, and the opinion is growing that the summer months in the Iron trade will be quiet. In certain quarters hope is expressed that the Lake Ore Association may yet be put together for this year, but in view of the present conditions this is hardly likely. We understand that a number of contracts for Ore have been made for this season's delivery at considerably lower prices than last year. The trade are buying only from hand to mouth and the volume of new business is relatively small. Bessemer Pig Iron is nominally $13, Valley, but if any business were offering the price would be shaded. Northern No. 2 Foundry Iron is freely offered as low as $13.40, Valley, but there is very little buying. Gray Forge is also neglected, and is nominally $12.50 to $12.75, Pittsburgh. There is nothing of special interest to note in Finished Iron and Steel, the demand for which is only fair. The lines of product that have been very active, such as Tin Plate, Pipe, Sheets and Wire products, are showing a falling off in demand, but the mills making these products are pretty well filled up for the next several months. There have been no important changes in prices.

**Ferromanganese.**—An inquiry is in the market for 500 tons of Ferro for the Colorado Fuel & Iron Company, at Pueblo. Agents for English makes refuse to quote on this on account of the high freight and the very low prices ruling on domestic. The contract may possibly be taken by the local interest. We quote domestic Ferro at $41.50 in large lots and $42 in small lots, delivered.

**Muck Bar.**—There is practically no demand, and we have not heard of any sales of magnitude in this market for some time. We quote nominally at $25, Pittsburgh, but on a firm offer this would be shaded.

**Wire Rods.**—One of the Western Wire mills is in the market for 500 tons of Rods for early delivery. We quote Bessemer and Open Hearth Rods at $30.50 to $31, Pittsburgh.

**Skelp.**—New tonnage in Skelp is very light, but the mills are pretty well filled up on contracts taken some time ago. We quote Grooved Iron Skelp at 1.40c. to 1.45c.; Sheared Iron Skelp, 1.50c. to 1.52½c., and Grooved and Sheared Steel Skelp at 1.35c., all f.o.b. Pittsburgh.

**Steel Rails.**—Orders for Steel Rails placed in the last week or ten days, and aggregating some 75,000 tons, have given rise to the hope that the leading lines may yet come into the market and place large contracts for delivery this year. This is hardly probable, however, as it seems to be the settled policy of the railroads to buy only such tonnage of Rails as may be actually needed. It is understood that

on all contracts for Rails placed for delivery this year prices are guaranteed against decline. In case the price of Rails is reduced, the Rail mills would have to make the same price on all unfilled contracts. We quote at $28, at mill, for Standard Sections.

**Structural Material.**—The railroad demand for Structural Steel is very quiet, but there is a good general demand for small buildings and other work, which aggregates a fair tonnage. While it is true that a great deal of large work is in sight, yet it is very slow in developing, and it is probable that much of it will go over until next year. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c.

**Plates.**—There is no improvement in the demand for Plates, which continue very dull. However, the Steel Car Works have recently taken some fair sized contracts for cars, and it is expected that the demand for Plates from this class of consumers will soon show improvement. We quote: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c., at mill, Pittsburgh; Locomotive Fire Box, not less than 2.10c., and it ranges in price up to 3c. Plates more than 100 inches in width, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

**Sheets.**—Advices are somewhat conflicting, some of the mills reporting a good volume of tonnage, while others report that demand is only fair. As a rule, consumers are confining their purchases mostly to actual needs, but we are advised that several good sized contracts have recently been placed, deliveries running into July. We quote: No. 26 Black Sheets, box annealed, one pass through cold rolls, 2.05c. to 2.10c.; No. 27, 2.10c. to 2.15c., and No. 28, 2.20c. to 2.25c., f.o.b. at mill, for carload lots. Galvanized Sheets are held at 2.85c. for No. 26, 3.04c. for No. 27 and 3.23c. for No. 28, in carload lots, for ordinary specifications.

**Bars.**—New tonnage in both Iron and Steel Bars is light, due largely to the fact that consumers covered their requirements, especially in Steel Bars, before the advance in prices was made some time ago. As noted last week, specifications on contracts are coming in at a fairly satisfactory rate, but very few of the mills rolling either Iron or Steel Bars are as busy as they would like to be, and all of them could take care of a good deal more tonnage if they had it. We quote Iron Bars at 1.35c. to 1.40c., Pittsburgh, and Steel Bars at 1.35c., Pittsburgh, in carload and larger lots, with the usual differentials for less than carloads. On Open Hearth Bars $1 a ton advance is charged.

**Hoops and Cotton Ties.**—The demand for both Hoops and Bands is only fair, and is not nearly so large as it was a month ago. We quote Steel Hoops at 1.40c. and Steel Bands at 1.30c. to 1.35c., extras as per Steel card.

**Merchant Pipe.**—The Pipe mills are all very busy, and will be for several months, but are running largely on contracts placed some time ago. However, some of the mills report that the demand for Merchant sizes has shown improvement in the past week, but at the same time it is not as heavy as it was a month or so ago. Prices on the whole are fairly firm, but are sometimes slightly shaded, depending on specifications. Pittsburgh basing discounts to consumers in carloads, but which are sometimes shaded, are as follows:

*Merchant Pipe.*

| | Steel. | | Iron. | |
|---|---|---|---|---|
| | Black. | Galv. | Black. | Galv. |
| | Per cent. | Per cent. | Per cent. | Per cent. |
| ⅛, ¼ and ⅜ inch | 68 | 58 | 66 | 56 |
| ½ inch | 71 | 61 | 69 | 59 |
| ¾ to 6 inches | 75 | 65 | 73 | 63 |
| 7 to 12 inches | 71 | 61 | 68 | 58 |
| Extra strong, plain ends, ⅛ to 8 inches | 67 | 57 | 64 | 54 |
| Double extra strong, plain ends, ⅛ to 8 inches | 59 | 49 | 56 | 46 |

**Boiler Tubes.**—A slight increase in the demand for Boiler Tubes is noted, but new tonnage being placed is rather disappointing and is not nearly so heavy as a month or six weeks ago. There is more or less unevenness in prices, which are shaded 5 per cent. or more, depending on the order. Discounts to consumers in carloads, which are more or less shaded, are as follows:

*Boiler Tubes.*

| | Steel. | Iron. |
|---|---|---|
| 1 to 1½ inches | 42½ | 39 |
| 1¾ to 2¼ inches | 55½ | 38 |
| 2½ inches | 58 | 43 |
| 2¾ to 5 inches | 64½ | 50½ |
| 6 to 13 inches | 55½ | 38 |

**Merchant Steel.**—The demand is only fair and is not nearly so large as in the latter part of March and early in April. Some of the mills report that specifications on contracts are coming in very slowly. We quote: Hexagon Steel Bars, 1.60c. for Bessemer and 1.65c. for Open Hearth; Plow Steel, 6-inch and under, 1.40c. for Bessemer and 1.45c. for Open Hearth; Plow Slabs, ¾-inch and heavier, 1.65c.; Tire Steel, smooth finish, ¾ x 3-16 and larger, 1.65c. flat; Toe Calk, 1.90c.; Carriage Spring Steel, 1.75c. The demand for Shafting is fairly active, and we quote at 52 per cent. off in carloads and 47 per cent. in less than carloads delivered in base territory.

**Tin Plate.**—As far as the demand goes, Tin Plate is probably the most active on the whole Iron and Steel list, reports being that the American Sheet & Tin Plate Company are operating all their plants to the utmost capacity, while the outside mills are running full and have a large amount of business booked. Nearly all the mills are considerably behind in deliveries of Tin Plate, owing to the very heavy demand. We continue to quote 100-lb. Coke Ternes at $3.40 per box, Pittsburgh.

**Spelter.**—Both Lead and Spelter are weaker in price and the demand is dull. We quote Prime Western Spelter at 5.12½c., f.o.b. Pittsburgh, for prompt shipment, and on a firm offer this would be shaded. We do not hear of any recent sales.

**Iron and Steel Scrap.**—The Scrap market is practically lifeless, the only business moving being between dealers. Prices have gone off considerably and Heavy Melting Scrap is being offered as low as $12 in gross tons. No. 1 Wrought Scrap is about $13, net; Malleable Scrap, $11.75 to $12, gross tons; Cast Iron Borings, $5.75 to $6, gross tons; Turnings, $7.50 to $8, gross tons, and Bundled Sheet Scrap, $9.25 to $9.50, gross tons, all f.o.b. Pittsburgh. Prices on Scrap are merely nominal, as there is practically no Material moving.

**Coke.**—There is a fair demand for Foundry Coke, but very little for Furnace Coke. There is a plentiful supply of cars and the output in the Upper and Lower Connellsville regions is running at about 200,000 tons a week, and shipments are about 2000 cars a day. Strictly 72-hour Foundry Coke is held at $2 to $2.10 to consumers, but Foundry Coke made outside the Connellsville region is selling at lower prices. Strictly Connellsville Furnace Coke is held at $1.60 to $1.65 a ton, but a number of sales of Furnace Coke in transit, which had to be moved to save demurrage, have been made at $1.50 a ton. Main Line Furnace Coke is selling at $1.40 to $1.45 a ton.

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Foster & Green, Farmers' Bank Building, Pittsburgh, dealers in Machinery, Rails, Pipe and Scrap, have been appointed sales agents for Wyckoff's wood water Pipe, made by the A. Wyckoff & Son Company, Elmira, N. Y., and have also been appointed sales agents for Steel Shafting made by the Cumberland Company, Cumberland, Md.

Max Solomon, dealer in all kinds of Iron and Steel Scrap, whose offices and yards are located at Beaver Falls, Pa., has opened a branch office at 1209 Park Building, Pittsburgh.

## April Fluctuations in Iron Stocks.

The following table shows the fluctuations in quotations of the stocks of iron and steel companies in the month of April, with the dates on which the highest and lowest prices on each stock were realized:

| | | Lowest. | Date. April | Highest. | Date. April |
|---|---|---|---|---|---|
| ..... | Allis-Chalmers, com.... | 6½ | 22 | 7⅞ | 8 |
| ..... | Allis-Chalmers, pref.... | 40 | 28 | 43 | 8 |
| $41,233,300 | Amer. Can, com..... | 4 | 27 | 4½ | 11 |
| 41,233,300 | Amer. Can, pref..... | 33¾ | 26 | 37 | 29 |
| 29,000,000 | Am. Car & F'dry, com.. | 17 | 20 | 20⅝ | 7 |
| 29,000,000 | Am. Car & F'dry, pref.. | 69½ | 29 | 74¾ | 7 |
| 24,100,000 | Am. Locomotive, com.. | 18⅛ | 27 | 22⅛ | 6 |
| 25,000,000 | Am. Locomotive, pref.. | 80 | 27 | 83 | 8 |
| 45,000,000 | Cambria Steel..... | 19⅛ | 30 | 20¼ | 8 |
| 17,000,000 | Colorado Fuel & Iron.. | 28¼ | 5 | 33⅝ | 11 |
| 25,000,000 | Crucible Steel, com.... | 4¾ | 22 | 5⅞ | 14 |
| 25,000,000 | Crucible Steel, pref.... | 31 | 5 | 45 | 18 |
| ..... | Dominion Iron & Steel. | 9 | 8 | 10¾ | 11 |
| 4,449,800 | Otis Elevator, com..... | 26½ | 4 | 30 | 9 |
| 6,350,000 | Otis Elevator, pref.... | 88 | 26 | 90 | 16 |
| 16,500,000 | Pa., new, pref., Phila.. | 80 | 13 | 80 | 13 |
| 12,500,000 | Pressed Steel, com.... | 24½ | 21 | 30¼ | 8 |
| 12,500,000 | Pressed Steel, pref..... | 70 | 21 | 72⅝ | 12 |
| 10,000,000 | Railway Spring, com.. | 18¾ | 21 | 21 | 5 |
| 10,000,000 | Railway Spring, pref.. | 72¾ | 22 | 75¼ | 12 |
| 27,191,000 | Rep. I. & S., com..... | 6⅝ | 27 | 8 | 7 |
| 20,306,900 | Rep. I. & S., pref..... | 41¼ | 26 | 48 | 8 |
| 7,500,000 | Sloss-Shef. S. & I., com. | 39 | 27 | 41¾ | 12 |
| 6,700,000 | Sloss-Shef. S. & I., pref. | 83¾ | 6 | 84 | 6 |
| 20,000,000 | Tennessee Coal & Iron. | 35 | 29 | 41⅛ | 7 |
| 12,106,000 | U. S. C. Pipe, com..... | 6⅜ | 8 | 7½ | 29 |
| 12,106,000 | U. S. C. Pipe, pref..... | 41 | 4 | 41⅞ | 28 |
| 510,361,300 | U. S. Steel Co., com... | 10⅛ | 30 | 12 | 8 |
| 508,511,200 | U. S. Steel Co., pref.... | 55½ | 26 | 62½ | 8 |
| ..... | U. S. Steel Co., new 5s. | 75¼ | 25 | 79⅝ | 12 |

## Cleveland.

CLEVELAND, OHIO, May 10, 1904.

**Iron Ore.**—The dissolution of the Bessemer Ore Association did not bring about any radical change in the Ore situation in this territory. The selling of Ore seems to have stopped with the closing of contracts last week for a good tonnage on long terms. The buyers now seem to be holding back, not being sure what the market in the immediate future is likely to bring about. It seems to be a scalpers' market altogether, and the furnacemen are not rushing under cover until they know that they have rock bottom prices. The producers so far are neither disposed to hold for the basis of prices tacitly agreed upon at the New York meeting, nor are they disposed to break away from those prices. The market has no specific trend one way or the other. The only price recently made which is at all indicative is $3 for long time delivery and $2.75 for short time delivery on Bessemer Mesaba. The lake situation has been complicated lately by the appearance of trouble between the owners and the masters and pilots of the boats. The controversy has been so heated that navigation, even were the channels free, would have been impossible. The possibility of a nearby agreement on the question of wages seems to leave the ice conditions as the only possible bar to the immediate opening of navigation. The channels are passable to boats, but not free of ice by any means. It will be at least another week before any cargoes can be started from the head of the lakes.

**Pig Iron.**—The market seems to be a waiting one. The situation is a little enigmatical just now. In most quarters it is conceded that any reduction which has been made in the prices on Ore have already been discounted by the reduction in the price of Pig Iron which was made about the first of the year. On the other hand, some inquiries have been appearing during the past few days which have made a specific demand for a reduction in the price of Pig Iron growing out of the reduction in the price of Ore. Moreover, the lack of buying, either for spot or future delivery, inclines the producers to take some action which will induce a little better buying in the market generally. The result of this situation is that the market for the present is very dull. The demand for Bessemer and Basic has flattened out. A few inquiries are coming in now and then, but they are for small amounts and mean very little. Sales would be made around $13 in the Valleys for either present or future delivery. The Coke situation is a little easier than it was. The car situation is much improved, and deliveries both on old and new contracts are much better than they have been. Prices are unchanged at $2.25 to $2.50 at the oven for good 72-hour Foundry Coke, and $1.50 to $1.60 for Furnace Coke. We quote Pig Iron prices, f.o.b. Cleveland, as follows:

| | |
|---|---|
| Northern Coke, No. 1 Foundry | $14.25 to $14.50 |
| Northern Coke, No. 2 Foundry | 13.75 to 14.25 |
| Northern Coke, No. 3 Foundry | 13.25 to 13.50 |
| Southern Coke, No. 1 Foundry | 14.35 to 14.60 |
| Southern Coke, No. 2 Foundry | 13.85 to 14.10 |
| Southern Coke, No. 1 Soft | 14.35 to 14.60 |
| Southern Coke, No. 2 Soft | 13.85 to 14.10 |
| Jackson County, 8 per cent. Silicon | 16.50 to 17.00 |
| Hanging Rock Charcoal, No. 1 | .... to 23.45 |
| Southern Charcoal, No. 1 | 19.50 to 20.00 |
| Lake Superior Charcoal | 16.50 to 17.00 |

**Finished Iron and Steel.**—There are some indications of a little more vigor, but the market as a whole is waiting for some development. Bar Iron has shown a tendency to weakness. The report is that some of the smaller mills have been cutting $1 per ton. It seems that some of the producers have been failing to charge the freight rates which make up the Pittsburgh quotation, but there has been little, if any, deviation from the quotation of 1.35c. at the mill. The quotation of 1.35c., Pittsburgh, is not, however, generally regarded. The Steel situation continues to be strong, although not buoyant. Prices are steady. The market has seen continued activity in Hoops and Bands, with prices holding their own. On small lots Hoops are still selling at 1.50c., Pittsburgh, while in round lots the price holds at 1.40c., Pittsburgh, the recent rumored advance not having taken place. The demand for Light Rails appears to have eased up a little with the slackening of mining operations in this territory, although there is still a good run of orders coming in. Inquiries for several thousand tons of standard Rails are still pending. Prices hold as they have been, standard being $28, Pittsburgh, and Light Rails, $24 to $25, Pittsburgh. The call for material in the Structural and Plate trades has not increased. Prices are steady, but of late the talk of a strong demand for a reduction has been resumed. The Billet trade is not attracting much attention, other than it presents now and then reports of a shading of prices ranging between $1 and $2 below the current quotation of $23.50, Cleveland, for Bessemer, 4 x 4. The Sheet trade has been rather dull. It is understood that most of the current business is going to concerns which are making liberal reductions from the association list. Prices continue as recently quoted, being 2.50c. for No. 27 Black Sheets out of stock as a basis, 2.25c. to 2.35c. for No. 27 One Pass Cold Rolled in car lots at the mill, while Galvanized Sheets are quoted 75, 10 and 5 off list for Nos. 16 to 20, and 75, 10 and 7½ off list for No. 22 and lighter.

**Old Material.**—The market has been rather dull, with prices inclined to lose further. The market is mostly nominal at any basis now. The following quotations are continued, it being understood that in several instances they represent no transactions within the past week, all gross tons: Old Steel Rails, $13 to $14; Old Car Wheels, $13 to $14; Heavy Melting Steel, $13. All net tons: Cast Borings, $5 to $5.50; No. 1 Railroad Wrought, $12 to $12.50; No. 1 Busheling, $11 to $11.50; Wrought Turnings, $7 to $7.50; Iron Car Axles, $17 to $18; No. 1 Cast, $11 to $12; Stove Plate, $9.

## Birmingham.

BIRMINGHAM, ALA., May 9, 1904.

There was but little of interest in the Iron market the past week. It was the deadest, dullest week we have had for a long time. One fact was emphasized, and that was that it was a waiting market. There were some more of those special analyses orders on the market and some of them were accepted at a premium over the grade rate, running from 50c. to fully $1. For instance, $11 was obtained for special analysis Iron that would not grade by the usual method of grading, above No. 2 Soft. Other special lots were sold, but only in a small way, at $10.75 and $10.50. Iron of regular grade was offered on the basis of $10 for No. 2 Foundry, but the orders registered were few and all the offerings were not taken. There is very little doubt about Iron being offered on the basis of $9.75 for No. 2 Foundry by some sellers without inducing increased business. These sellers were important interests, but they were few in number. The majority were firm holders on the basis of $10 for No. 2 Foundry. A moderate activity in the demand would convince buyers that Iron here was in only moderate supply, with some grades hard to obtain even in very moderate lots.

There were some sales on the basis of $10 for No. 2 Foundry, and one interest secured an order covering 3000 tons on this basis. But their other orders were of little moment. The whole business for the week would not equal the usual sales for even one of the large interests. It is anticipated by those who keep tab on the varying phases of the market that enough orders will come in by the middle of the month to sustain values and even enhance them.

For No. 3 Foundry quotations are given at $9.50, and, in limited quantity, some could be had at $9.25. But the amount in stock of this grade is of small volume, caused by the unusual quantity of high grade Iron that the furnaces have been turning out of late. Compared with the past the increase excites comment. For days in succession some of our furnaces have turned out no grade as low as No. 3 Foundry. As a rule the furnaces are making exceptional runs. Gray Forge Iron is quoted now at $9, and if it was obtainable very good sales could be made. Basic Iron is quoted at $10, but there is nothing doing in it. Shipments continue good and buyers are taking their purchases as the deliveries mature. There are very few cases in which buyers ask for shipments to be delayed.

The Steel mill of the Tennessee Coal, Iron & Railroad Company is now running in all departments. They are rolling Rails continuously ,and will be for some time to come. They have a very flattering report from a railroad at Pittsburgh as to the wearing qualities of their Rails, which were thoroughly tested in trying situations. The Bar and Rod mill had to suspend operations on account of the short supply of water. The evil is being remedied by the extension of the mains of the Birmingham Water Works to the plant. This is about completed and it is protected against drouth hereafter. It has been supplied heretofore by tapping the water mains that supplied the Tennessee Company, but it turned out that neither of the two plants secured the quantity needed and the Bar mill was compelled to run a short line tapping the mains of the water works direct.

An examination of the sales books of the Tennessee and Sloss companies for the month of April showed that their average price entitled the miners to an advance of 2½c. per ton for mining Coal, so that for this month the rate is 50c. per ton.

A meeting of the directors of the Tennessee Company will be held in New York on May 17, when they will select their officers for the ensuing year. There is a good deal of gossip concerning probable changes, but nothing tangible.

A visit to the industries at East Birmingham showed them to be doing a satisfactory business, with their order books registering sufficient work to keep them going for some time to come. In the shops of the East Birmingham Machine & Foundry Company they are finishing the largest fly wheel ever cast in the South. The total weight is 95 tons and the diameter is 25 feet. In the same shop, in different stages of completion, is a large amount of sugar machinery, the most of which is for account of the island of Porto Rico, and to this can be added a line of high-class engines, running some of them as high as 5000 horse-power.

The Birmingham Boiler Works are priding themselves

on being the first firm in the South to make Steel Buckets, having just finished an order for 150 for local account. They report business good, with an increased amount of heavy work offering.

The American Bolt Company also report business in good form. They make specialties and say that if they took no new business, they have enough orders booked to keep them going for some time to come.

Among the incorporations filed during the week the most prominent was the Beard Automatic Coupler Company, capitalized at $100,000. J. H. Pritchard is president, A. J. Beard is vice-president, and F. M. Lowe is secretary and treasurer.

A Glass factory at Anderson, Ind., has made arrangements to move to Anniston, bringing the workmen with them, in number about 100. Some local parties have in contemplation the erection of a plant for the making of brick by the Hunnecke sand-lime process.

The contract for building a six-story hotel has been let and it is to be completed by October 1. Other contracts for important buildings are being considered, but as this is a Presidential year some projectors are slow about turning their money loose and are hesitating about further investments.

## The New York Machinery Market.

NEW YORK, May 11, 1904.

We are in a position to confirm last week's statement with respect to the award of one-half of the contract for the Pennsylvania tunnel castings to the Wheeling Mold & Foundry Company, Wheeling, W. Va. We may add that the purchaser secured the option up to June 1 from the Wheeling Mold & Foundry Company to increase the quantity to the whole. There is, therefore, still a possibility that a part of the contract may go to a Buffalo foundry. The transaction was closed in behalf of the Wheeling Mold & Foundry Company by Thomas Robins, Jr., president of the Robins Conveying Belt Company, New York. We understand that the contract price was in the neighborhood of $26 to $26.50 per ton of finished castings, and that other, unsuccessful, bids were lower.

The Wheeling Mold & Foundry Company have opened an Eastern office in the Arcade Building, Philadelphia, F. F. Vandervort being Eastern sales agent.

So far as orders are concerned the week has been a very quiet one. Every branch of the machinery trade seems to be experiencing this condition, and reports are to be heard on all sides indicating that the little spurt of better business which set in two or three weeks ago has died out again. In that branch of the trade covering engines, generators, boilers and power plant supplies inquiry is good and sellers are pretty busy figuring, but the prospective purchasers are not closing. In the machine tool trade there is a fair business going, though in a small way. The orders that are being booked nowadays would have made a very nice showing four or five years ago, but during the last few years machinery men have acquired a much larger appetite and capacity for business, which is not nearly being satisfied to-day.

It is impossible to contemplate the present situation without marveling at the harmony prevailing among machine tool builders in the matter of the maintenance of prices. Everywhere in the trade the full credit for this is given to the National Machine Tool Builders' Association. The policy of this organization is being indorsed even by the machinery builders who are not yet enrolled under the banners of the association. It is quite natural that such should be the case, for the association has been holding the umbrella over them with unwavering stanchness. It is believed that the action of the association to continue its firm stand against fruitless price cutting taken at its recent Cincinnati convention will result in a considerable addition to the ranks of the organization. At this meeting P. E. Montanus, the secretary, delivered an excellent address, in which he showed in definite form what the association had accomplished. He said in part:

"The time and money expended in belonging to this association, attending these conventions, and paying its yearly dues have not been wasted, but, on the contrary, have been a source of actual profit from a monetary standpoint, to say nothing of the advantages accruing by belonging to the same and knowing each other personally.

"I have selected, as an example, a machine tool—an 18-inch lathe, first wishing to state that it would be burdensome to go through the whole gamut of lathes from 12 to 48 inch, in detail, although the same relative improvement in prices apply to any swing. I have selected the lathe, as personally I am more familiar with what has been accomplished in the lathe class, but believe that some of our members could take up the items of milling machines, planers, &ç., showing equally as favorable results. Assuming, for instance, that each lathe builder has produced 50 18-inch lathes since July, 1903, or, if this amount of 50 18-inch lathes appears excessive (taking into consideration the full range), let us put it at 100 lathes total, having been built by our members. Average size, 18 inches. The following result is shown, and I have been careful to mention the actual and correct figures obtained officially.

"Previous to July 14, 1903, at which time the lathe builders agreed on list prices of detail parts, additions, deductions, &c., the prices obtained from the majority of lathe builders show the following: (The 18-inch lathe is used as a basis throughout this comparative list, the same ratio of prices existing on all sizes from 12 to 40 inch swing, and you are asked to bear this in mind.)

"Extra length of bed per foot (18-inch lathe) ran from $8 to $14. The majority being about $10. Adopted price, $14. Average increase, $4 per foot. Increased receiepts per 100 lathes, $400.

"Taper attachment (18-inch lathe) ran from $36 to $60. Majority being about $50. Adopted price, $60. Average increase, $10. Increased receipts per 25 lathes, $250.

"Compound rests (18-inch lathe) ran from $14 to $19. Average about $17. Adopted price, $20. Average increase, $3. Increased receipts per 50 lathes, $150.

"Turret on bed (18-inch lathe) power feed ran from $125 to $195. Average being about $150. Adopted price, $210. Average increase, $60. Increased receipts per 10 lathes, $600.

"Turret on carriage (18-inch lathe) ran from $55 to $80. Average price about $75. Adopted price, $90. Average increase, $15. Increased receipts per 10 lathes, $150.

"Fitting chucks (18-inch lathe) ran from $1.75 to $3.60. Average about $3. Adopted price, $4. Average increase, $1. Increased receipts per 50 lathes, $50.

"Old pans (18-inch lathe) ran from $18 to $30. Average price about $28. Adopted price, $35. Average increase, $7. Increased receipts per 10 lathes, $70.

"Total gain on 100 18-inch lathes, $1670.

"In addition to the above, uniformity of prices was adopted covering deductions and additions of parts of the countershaft and the countershaft itself.

"You will thus be able to follow that I have conservatively placed a fair ratio of accessories, such as taper attachments, turrets, &c., to 100 lathes, showing increased receipts on 100 18-inch lathes, of $1670. Multiply this in any proportion you like for other sizes of lathes, and the lowest figure that I would dare place on the entire additional receipts accruing from the work of our association would be at least $3000 to $5000 per establishment.

"Now, gentlemen, do not forget that our association did more than this. In July, 1903, it promptly advanced prices on general lines from 5 to 10 per cent., not foolishly nor wantonly, but through sheer force of actual necessities, and I hope you will agree with me in the statement that it could not have been done individually as promptly or as effectively, as it was done collectively by our association. Furthermore, coming back to detail prices of lathe parts—the lists were promptly distributed to the jobbers, none of whom (to my knowledge) objected, but, on the contrary, commended and praised it by person and letters."

A matter of considerable importance to the machinery industry is the announcement made a few days ago by Hugo Bilgram of Philadelphia to the effect that he has redesigned his bevel gear planer and will place it upon the market for sale. The Bilgram bevel gear planer has for 20 years or more been a very well-known machine tool, but it has been out of the reach of the trade simply because Mr. Bilgram has steadfastly refused to place it upon the market, preferring to cut the gears himself for the trade. The only machine which passed out of Mr. Bilgram's control was the one which has been in operation at the Brown & Sharpe plant for a number of years. Now that the machine is to be offered for sale interest in it will doubtless be awakened.

Speculation as to the selection of the chief engineer to be in charge of the construction of the Panama Canal was put to an end yesterday by the acceptance of John Findley Wallace of Chicago. Mr. Wallace will take up his work with the Commission on June 1. It has not been determined when he will visit the isthmus, all matters of detail being left for a conference with the Commission. It is estimated that about two years will be required to complete the surveys, make the estimates of cost and decide on the final plans. In round figures the canal will cost $200,000,000 and will require ten years to complete. Aside from the engineers, machinists and other skilled labor, the constructive work will give employment to 50,000 men. The purchase of machinery for the prosecution of the work, it will be seen, is still a long way into the future.

The Pennsylvania Railroad Company, Philadelphia, are receiving estimates for the construction of their proposed new plant at Millham Junction, near Trenton, Pa. The plans, which were drawn by Joseph T. Richards, chief engineer of maintenance of way, provide for machine shop, wood working shop, blacksmith shop, paint shop and other buildings.

In the annual report of the United Railroads of San Francisco, Cal., President Hollandstater says that while the amount expended for construction work the past year has been in excess of the cash fund of $1,600,000 provided for that purpose by about $1,000,000, further amounts will be required in the near future to meet the expense of addi-

tional car equipment ordered, reconstruction of the Cliff House steam line, additional power station equipment, also for the erection of shops on the site recently purchased for that purpose.

Manning, Maxwell & Moore were awarded contracts amounting to about $85,000 for equipment of the new shops of the Southern Railway at Spencer, N. C. The contracts include machine tools of all types, principally of small and medium sizes.

Considerable interest has been manifested by the machine tool trade in the awarding of the contract for the equipment of the new Manual Training School which is being fitted out by the Board of Education of this city. The contract was considered a choice plum, particularly in view of the rigidity of the specifications, owing to the desire of the board to select an equipment which would testify to the very highest development in machine tool practice, and the belief that large future benefits would accrue to the fortunate bidders. The equipment includes the usual run of machine tools, all to be electrically equipped, and the contract aggregates about $34,000 in value. It was captured by Charles A. Moore of Manning, Maxwell & Moore.

The Shaw Electric Crane Company, whose works are at Muskegon, Mich., and whose offices are located at 85-87-89 Liberty street, New York, have just been awarded the contract for the cranes for the Niagara Construction Company at Buffalo, of which Gen. F. V. Greene is president. They have also sold to the Ontario Power Company, Niagara Falls, Ontario, a 50-ton crane, 77-foot span; to the South Dover Marble Company, South Dover, N. Y., a 25-ton crane, 72-foot span, and to the National Wire Corporation, New Haven, a 5-ton 35-foot span crane, and have taken an order for a 30-ton crane in Sweden.

Notice has just been published of the receivers' sale of the properties of the National Salt Company, at Ithaca, N. Y., on May 25, 1904. The mechanical apparatus to be sold includes some 77 boilers, aggregating more than 10,000 horse-power; engines, machine and blacksmith shop equipments and salt making machinery. The various plants are to be sold separately, but each complete, including its mechanical equipment. There are nine complete plants.

Pursuant to an order of the court the mills and all other property of the Union Foundry & Machine Company, Catasaqua, Pa., will be sold on Thursday, May 26. The terms and conditions of the sale are to be 10 per cent. of the price paid in cash on the day of sale and the residue on or before July 5, 1904. C. H. Zehnder of Catasaqua, Pa., is receiver. The plant is in excellent condition.

Purchases of a centrifugal pump of from 500 to 1500 gallons capacity, motors and elevators will shortly be made by the New York Butchers' Dressed Meat Company, 510 West Forty-second street, New York, for their new abbatoir at Eleventh avenue and Thirty-ninth street. As yet it is not known how many motors will be required, as the specifications for these have not been prepared. The company have recently placed orders for most of the equipment for their plant, covering a large amount of machinery.

The Gleason & Bailey & Seiple Mfg. Company, Seneca Falls, N. Y., are receiving estimates on new equipment which they expect to install. The company are contemplating certain changes in their works and will probably purchase some new machinery.

A fair sized amount of equipment will shortly be required by the Domestic Engine Company, Hagerstown, Md., who are to erect a new plant at Shippensburg, Pa., for the manufacturer of gasoline engines and pumps. There will be a brick machine shop, 40 x 125 feet, and foundry, 30 x 75 feet. The machinery to be installed has not yet been fully decided upon, but it will consist of milling machines, turret lathes, grinder, drill press, pipe threader, &c.

The Tampa Electric Company of Tampa, Fla., who are equipping a new station, have just purchased a 850 horse-power Hamilton Corliss engine from the Hooven-Owens-Rentschler Company of 39-41 Cortlandt street.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until June 11 for boilers, turbines, generators, condensers and appurtenances for the New Orleans, La., naval station.

The contract for installing coal handling machinery at the Boston Navy Yard, under bids opened April 9, has been awarded to the Robins Conveying Belt Company, New York, at $8000.

The contract for motors, &c., for the New York Navy Yard, bids opened April 23, has been awarded to the General Electric Company, Schenectady, N. Y., at $43,500.

The Stillwell-Bierce & Smith-Vaile Company of Dayton, Ohio, have opened large warerooms at 93 Liberty street, New York. An extensive line of pumps, condensers, feed water heaters and turbine water wheels will be carried in stock. The store will be under the management of George W. Neff, who for a number of years has had charge of the company's New York offices.

A complete list of the second-hand rebuilt wood working machinery carried in stock by the J. A. Fay & Egan Company of Cincinnati, Ohio, has just been issued. The list includes more than 100 machines of all types.

**Catalogues Wanted.**—The Glens Falls Lantern Company, Glens Falls, N. Y., desire catalogues for the following machinery: Punching and stamping presses, polishing lathes, wire straightening and cutting machines, tinsmiths' tools, &c. The company advise us that they intend doubling the size of their plant. C. T. Whipple, manager of the company, has the matter in charge.

## New York.

NEW YORK, May 11, 1904.

**Pig Iron.**—Locally the market has been very quiet, particularly in Foundry grades. Our monthly blast furnace statistics show that the Eastern producers are accumulating Pig Iron to a moderate extent. We continue to quote: Northern No. 1 Foundry, $15.50 to $16; No. 2 Foundry, $15 to $15.50; No. 2 Plain, $14.50 to $14.75, and Gray Forge, $13.75 to $14, tidewater. Tennessee and Alabama brands are $13.50 to $14 for No. 2 Foundry and $13 to $13.50 for No. 3 Foundry.

**Steel Rails.**—No sales of any consequence are reported this week. A meeting of the presidents of the Rail mills was held this week, but only minor details were discussed; the question of prices did not come up at all. Light Rails are again being sold at low figures.

**Cast Iron Pipe.**—Nothing of special consequence has developed in this immediate territory. Inquiries are not so numerous as they have been, and consequently business is inclined to be quiet. Prices on carload lots are unchanged at $28 per gross ton for 6 to 10 inch and $27 for 12 inch upward at tidewater. Special prices are quoted on large lots.

**Finished Iron and Steel.**—The Board of Estimate and Appropriations of this city have authorized the issue of $10,000,000 of corporate stock for the building of the superstructure of the Manhattan Bridge, which is to be the third bridge extending across the East River. This bridge is the one over which a controversy was waged during the previous city administration relative to the use of eye bars for cables. It is understood that the new administration favors Wire cables. The specifications have not yet been made public, but the bridge will probably require about 40,000 tons of Steel. The Pennsylvania Railroad Company are arranging for the construction of piers for a new double track Steel bridge over the Susquehanna River at Havre de Grace, Md. This bridge will require a heavy tonnage of Steel, which will probably go to the Pennsylvania Steel Company. Structural work in this locality is not exhibiting much activity, as capitalists are inclined to wait in the hope of being able to build more cheaply than can be done under existing conditions. The Plate business is quite dull, as might be expected in view of the strike in the local Boiler shops and shipyards. The Bar Iron situation is practically unchanged, being in somewhat better shape than other branches of the Finished Iron and Steel trades, but at the same time it is not displaying the life which was so noticeable last month. We quote at tidewater as follows: Beams, Channels, Angles and Zees, 1.74½c. to 2c.; Tees, 1.79½c. to 2c.; Bulb Angles and Deck Beams, 1.84½c. to 2.05c. Sheared Plates in carload lots are 1.74½c. to 1.85c. for Tank, 1.84½c. to 2c. for Flange, 1.94½c. to 2.10c. for Marine, and 1.94½c. to 2.50c. for Fire Box, according to specifications. Refined Bar Iron and Soft Steel Bars, 1.49½c.

**Old Material.**—Dealers report an exceedingly dull condition of trade. Inquiries are few and prices show further weakness. Quotations are as follows, per gross ton, New York and vicinity:

| | |
|---|---|
| Old Iron Rails | $15.00 to $16.00 |
| Old Steel Rails, long lengths | 13.00 to 13.50 |
| Old Steel Rails, short pieces | 11.50 to 12.00 |
| Relaying Rails | 18.00 to 19.00 |
| Old Car Wheels | 11.50 to 12.00 |
| Old Iron Car Axles | 16.00 to 17.00 |
| Old Steel Car Axles | 14.00 to 15.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.00 |
| No. 1 Railroad Wrought Iron | 13.50 to 14.00 |
| Iron Track Scrap | 12.50 to 13.00 |
| Wrought Pipe | 9.00 to 10.00 |
| Ordinary Light Iron | 7.00 to 7.50 |
| Cast Borings | 4.00 to 4.50 |
| Wrought Turnings | 6.75 to 7.25 |
| No. 1 Machinery Cast | 11.00 to 11.50 |
| Stove Plate | 9.00 to 9.50 |

**The Henry W. Oliver Estate.**—An appraisement of the estate of the late Henry W. Oliver of Pittsburgh, who died on February 8, has been completed. The estate, according to appraisement, is said to be worth between $16,000,000 and $17,000,000. Of the appraised valuation of the estate over one-third is in real estate holdings, but at the time of his death Mr. Oliver owned considerable railroad stock. He was also one of the largest stockholders of the Pittsburgh Coal Company. A great deal of stock of the Oliver Iron & Steel Company was owned by Mr. Oliver, and his holdings in the Oliver & Snyder Steel

Company were also large. He was further heavily interested in the Standard Steel Car Company, and had considerable stock in the United States Steel Corporation. Besides these holdings, Mr. Oliver owned stock in several Pittsburgh banks and trust companies.

### Iron and Industrial Stocks.

The stock market generally has experienced a very dull week. Transactions have been few and fluctuations quite narrow. The only feature in any way noteworthy was the exhibition of some weakness in United States Steel 5 per cent. bonds on Friday and Saturday, following the formal announcement of the dissolution of the syndicate organized for the conversion of preferred stock into bonds. The bonds declined under quite heavy realizing sales to 71¾, from which they gradually recovered until they reached 73⅛ on Monday. On Wednesday morning the United States Steel stocks were under pressure, the common selling down to 9½ and the preferred to 54¼. Latest sales on iron and steel stocks up to 1.30 p.m. on Wednesday were as follows: Car and Foundry common 16¾; Locomotive common 18½; Colorado 31¾; Railway Spring common 17½, preferred 73; Republic common 6⅝, preferred 39⅜; Tennesse 34⅜; United States Steel common 9⅝, preferred 54½, new 5's 72½.

**The Lake Superior Company.**—The corporation to be organized to take over the property of the late Consolidated Lake Superior Company is to be named the Lake Superior Company. An application for incorporation will be made in New Jersey. Following is a statement of the securities to be issued: Capital stock, $40,000,000. First mortgage 5 per cent. bonds to be issued now, about $8,500,000; the balance of authorized issue, $1,500,000, in treasury. Income 5 per cent. bonds, $3,000,000. Total annual interest on first mortgage and income bonds issued, $575.000. Preferred stockholders will receive in exchange for 100 shares of old stock and an assessment of $3 per share, or $300 in cash; Income 5 per cent. bonds of reorganized company, $300; capital stock of reorganized company, 50 shares, par value $100 each, $5,000. Common stockholders will receive in exchange for 100 shares of old stock and an assessment of $3 per share, or $300 in cash: Income 5 per cent. bonds of reorganized company, $300; caiptal stock of reorganized company, 25 shares, par value $100 each, $2,500. Announcement is made that "only holders of stock surrendering certificates and paying assessments will participate in reorganized company."

Jacob S. Coxey, representing the Coxey Steel & Silica Sand Company, Massillon, Ohio, has evolved a rather novel plan of issuing bonds. He proposes to issue $500,000 first mortgage 6 per cent. gold bonds on the plants of the company, due in 1964. He agrees to deposit with the Union Savings Bank & Trust Company, Cincinnati, $22.53 on each $100 bond sold, which they are to carry for 60 years at 2½ per cent. interest. This deposit will pay the face value of the bond at maturity.

At the annual meeting of the Stockholders of the Tennessee Coal, Iron & Railroad Company, held May 3 at Tracy City, Tenn., the four retiring directors were re-elected.

The Board of Directors of the Shelby Iron Company decided May 5 to pass the dividend on that stock for the time being. It was stated that the company had sufficient cash on hand to pay a dividend, but in view of the unsettled condition of the iron trade it was thought wise to wait with a dividend declaration and to keep the money in the treasury against contingencies until an improvement was noticeable in the business. Last year the company paid a dividend of 15 per cent., and they have paid dividends at an average rate of 13 per cent. for several years.

**Dividends.**—Niles-Bement-Pond Company have declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable May 14.

Pratt & Whitney Company have declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable May 14.

## Metal Market.

NEW YORK, May 11, 1904.

**Pig Tin.**—Prices have declined again, and the market is very easy, even at the lower figures. Business is extremely quiet. The decline here followed a heavy falling off of prices in London, which is attributed to heavy selling to London on the part of the Chinese. Another cause of the decline here is the general dullness owing to the slow demand from the interior. This condition, it is held, is quite natural in view of the heavy shipments into the interior of the last two months. Consumers are said to be very well stocked up at present. Spot sold as low as 27.60c., and there were transactions in May and June at 27.50c. The closing figures to-day were as follows: Spot and May, 27.50c. to 27.65c.; June, 27.37½c. to 27.62½c. The lowest London prices which were cabled yesterday named £124 15s. for spot and £123 15s. for futures. To-day's closing cable named £125 7s. 6d. for spot and £124 for futures.

**Copper.**—The market is still firm as to price and dull so far as consumptive demand is concerned. Prices are unchanged and as follows: Lake, 13.37½c. to 13.62½c.; Electrolytic, 13.12½c. to 13.25c.; Casting, 12.87½c. to 13.12½c. The London market is somewhat lower with £57 10s. for spot, £57 11s. 13d. for futures and £62 15s. for Best Selected. The exports thus far this month have been light, amounting to 4300 tons.

**Pig Lead.**—Demand is not active, purchasing being on a rather light scale and confined almost wholly to spot, which is still rather scarce. The market at the close was more or less easy, but with prices unchanged. Spot is quoted in New York, from store, at 4.60c. to 4.65c. The American Smelting & Refining Company continue to quote on a basis of 4.50c. for 50-ton lots of Desilverized, shipment within 30 days. Shipments can be had for 4.50c. St. Louis telegraphs 4.35c. to 4.40c. London cables to-day show a further decline to £11 17s. 6d

**Spelter**—Is unchanged, with a moderate demand and no pressure to sell. Spot and May shipments are quoted at 5.20c. to 5.25c., New York. Shipments from the West are offered at 5.20c. St. Louis is easy at 5c. to 5.05c. London cables show a decline to £22 5s.

**Antimony.**—A light demand is noted and the market is rather easy, although unchanged as to price. At the close to-day Cookson's was quoted at 7¾c. to 8c., Hallett's at 7¼c. to 7½c., and other brands at 6¼c. to 6½c.

**Nickel.**—The usual amount of business is passing and prices are firm, large lots being quoted at 40c. to 45c. and smaller quantities at 50c. to 60c.

**Quicksilver.**—The market is quiet, with ample stocks and a demand of moderate proportions. Flasks of 76½ lbs. are quoted at $45. The London price to-day is £8 2s. 6d.

**Tin Plate.**—The market is unchanged, with a fair demand reported. Quotations are very firm, on the basis of $3.45 per box for 14 x 20 100-lb. Cokes, f.o.b. mill, equivalent to $3.64, New York. The Welsh market has declined 1½ pence to 11 shillings 7½ pence, f.o.b. Swansea.

Pig Iron Warrants are again being quoted by the New York Metal Exchange. For a year or more past, while the stocks were very low in the Warrant Yards, these quotations have been absent from the Metal Exchange figures. As the stocks have now increased to 73,000 tons and show a further increasing tendency, it has been decided by the Board of Managers to post the figures again. The basis of contract is No. 2 Foundry, Birmingham, and to-day's figures named $9 bid and $9.75 asked for spot and May and $9 bid and $9.50 asked for June to September.

The offices and warerooms of the Columbia Smelting & Refining Works have been removed to 365 and 367 West street and 606 to 610 Washington street, New York, where a large stock of Brass and Metals will be carried. The factory will not be removed from its present location in Water street, Brooklyn.

## OBITUARY.

CLARKE MERCHANT.

Clarke Merchant, president of Merchant & Co., Incorporated, Philadelphia, Pa., died of pneumonia on May 7 after a short illness. Mr. Merchant was born in Oglethorpe Barracks, Savannah, Ga., September 20, 1836, his father, Charles Spencer Merchant, being an officer in the United States Army, who retired with the rank of colonel and brevet brigadier-general. Clarke Merchant entered the navy as midshipman in 1852, and served on the Pacific Coast, in China, in the Mediterranean and subsequently on the Atlantic Station throughout the whole of the Civil War, in which he distinguished himself. He retired from the naval service in 1863 with the rank of lieutenant-commander and engaged in business in Philadelphia as a member of the firm of Carman, Merchant & Shaw. Subsequently he entered into business alone, his trade being principally in sheathing metal, sheet copper and other metals. Adding tin plate to his line of goods, he eventually made an arrangement with the tin plate manufacturers of Wales by which he gained a controlling position in this line of trade. The firm of Merchant & Co. to-day handle the entire product of some of the leading brands of roofing tin, and also operate a tin plate works of their own. Mr. Merchant was widely known in the metal trade both here and abroad, and was prominent in the business life of his city. He was a member of the Philadelphia Club, the Union League and the Loyal Legion, and was president of the Schuylkill Traction Company and the International Sprinkler Company.

# Notes from Great Britain.

### A General Trade Revival.

LONDON, April 30, 1904.—There cannot be much doubt that during the past few weeks there have been abundant signs of a general trade revival, not only in the iron and steel industries, but in the other staple industries of Great Britain. It is useful to keep track of all trade currents, because one trade helps the other, and it is very unusual for one department to be in a healthy condition when the others are slack. Taking a bird's eye view, therefore, both of commerce and finance, there is sufficiently strong evidence to warrant an expectation of activity in the near future.

It seems that the abnormal and very adverse condition of the cotton trade is now drawing near a close. Supplies of raw cotton have been coming to hand more freely of late, and although it would, perhaps, be sanguine to look for any important decline in the prices of raw material in the near future, yet with the diminution in the American speculative account, brought about by recent failures, we may, at least, anticipate a more stable level of values and a weakening of these disturbing and uncertain factors which have wrought with such disastrous effect upon the market for manufactured goods. In the last week or two buyers have been coming forward more freely, and it is not improbable that Lancashire has now seen the worst of the hard times. In the woolen and worsted industries factors similar in kind, though less intense in degree, have been at work. Manufacturers of cloth have encountered like difficulties in inducing purchasers to accept prices which would compensate for the rise in raw materials. In the Yorkshire woolen districts, though the great majority of mills are working whole time, considerable difficulty is experienced in keeping machinery going to its full capacity. Fortunately, in this industry also evidences of improvement are now discernible. In the linen industry some improvement is reported from the leading centers, such as Belfast, Dundee and Barnsley, and this notwithstanding a decline in shipments to the United States. Altogether the outlook for the textile trades, though by no means brilliant, is distinctly more encouraging than has been the case for some time.

### The Metal Market.

It is not surprising that the metal market should be in sympathy with the conditions sketched above. It cannot be said, of course, that trade is booming, or even that, from the point of view of a greedy manufacturer, trade is satisfactory. But, bearing in mind how that last autumn we were all expecting very shortly to be in the slough of a severe trade depression, it is satisfactory to observe an upward, rather than a downward, tendency. Specifications are being given out with less hesitation, and most of the finished iron establishments in England are now working their average number of turns per week. The miscellaneous industries are more fully occupied. For example, chain makers are busy on orders resulting from the improvement in the shipbuilding industry.

Pig iron is well covered by current contracts, and smelters are therefore in a position to hold their hand and not sell under pressure. In the steel branch there is still a considerable weight of German and American steel coming into the country, but this is gradually easing itself, owing to the fact that American and German sellers have been off the market recently. The steel now coming in is, of course, the outcome of previous orders. In addition, it is reported from Wolverhampton that orders for steel blooms and billets, formerly placed with Germany, have had to be replaced locally. No further important changes of price are to be reported.

### The American-German Conference.

Sir Alfred Hickman, M. P., has been interviewed upon the international conference of steel manufacturers. He is one of the great personal factors in the Midland iron and steel trade. Some of the points made by him are significant, as representing the opinions of a number of British iron and steel manufacturers. He remarked:

"If there is such a conference I know nothing of it, nor do I think it is of any importance whatever. A few people may have met together and discussed the question more or less formally, but the only serious effort in that direction was made about six months ago, when the representatives of the tubes trades in England, Germany and America met. These gentlemen agreed that each country should confine its operations so as not to invade or injure either of the other two, but all three could compete or 'dump' in any other country not in this industrial triple alliance. But what was the result of it all? When American manufacturers heard of the arrangement they set it at naught, remarking that they were not going to give up the British market, where they could send their goods in free, and protected by their tariffs they expressed indifference to anything the Englishman might do."

"So the whole conference was a fizzle, Sir Alfred?"

"Absolutely. How it could be otherwise I cannot see, for we are totally unable to enter any such conference on equal terms. They might confer with us, perhaps, upon the question as to when we are going to give up the remainder of our trade."

"Does your experience go to prove that the iron and steel trade has recently got much worse under the one-sided system we persevere in maintaining?"

"Yes, I do. The greater proportion of our trade is affected now, and things have come to such a serious pass that something must be done soon. I have been going into the matter very fully lately in order to give my evidence before the Tariff Commission. The compulsory restriction of our output, I found, was acting most disastrously upon the iron and steel trade, apart altogether from the 'dumping.' I actually discovered that the difference between working at full and half-time was a matter of about 32 shillings a ton in the case of the manufacture of ship's plates, and this statement was more than corroborated by another ironmaster giving evidence after me. Of course, outsiders do not know the peculiar circumstances of our trade. Discoveries are constantly being made in the world of chemical science and metallurgy, and to keep pace with them enormous sums have to be spent on new machinery. Thousands of pounds worth of stuff is thrown upon the scrap heap in the course of a very few years, and when short time has to be resorted to owing to foreign dumping it is next to impossible to keep up to date with machinery, and if this is not done the manufacturer might just as well shut up his works."

Coming from the general to the particular, Sir Alfred related a case that he had laid before the Tariff Commission. It was a remarkable story, and one which indicates how absolutely imperative it is that something should be done to save the trade. Said he:

"There is a firm in Middlesbrough in which I am personally interested. It has had a very eventful career. When it first started it sank about £250,000 in plant, and engaged in the manufacture of sheet bars, billets, and so on. For seven years it did well, paying never less than 10 per cent. and often as much as 20 per cent. in dividends. Then the Germans began to 'dump' sheet bars, and for four years the firm went steadily backward and made no dividend at all. Things were getting very serious, and the directors in order to stop the slump decided upon a further outlay of £50,000 in order to begin making tram rails. For two years things went all right again and decent profits were realized. The prosperity, however, was short lived. The foreigners began 'dumping' rails now, and the second trade was as irretrievably ruined as the first. Recently, in order to keep alive at all, the concern has had to amalgamate with another doing other classes of work altogether."

"Classes which the foreigner has not yet touched?"

"Precisely. They have not yet touched them, but there is no telling how soon our suicidal system of trading may tempt them. I got one of the directors of the firm in question to come up to London and tell the story fully to the members of the Tariff Commission, and you can imagine that it was not without effect. This is what is going on in the iron and steel industry every day, and I think we want something more than conferences such as you mention for our self-defense and to put us on a proper footing with regard to international trade."

### Alcohol for Motors.

An amendment is to be proposed during the course of the Budget discussion, in order to free from duty alcohol used for driving motors, experience having shown in connection with French and German cars that spirits may be most efficiently used for such motors, and that economy will result if no duty were exacted. Petrol otherwise has the advantage. In theory the consumption of spirits for an equal power is 1.8 times the consumption of petroleum; but in practice the presence of water in the spirits increases the elasticity and efficiency of the motor, and the proportion between the two becomes 1.25 to 1. It is a remarkable fact that with all vapor engines a slight spraying of water improves the efficiency. Spirit motors, too, have more elasticity than petroleum motors, and work more softly. The pressure of the explosions can be increased without disadvantage to the machine. The efficiency is 23 per cent., as compared with 15 per cent. for petroleum motors and 13 per cent. for steam engines, and as a result the use of alcohol for motors has greatly extended, especially in France and Germany.

The alcohol used in Germany for such purposes is mainly potato spirits and costs, including the expense of methylating, from 18 to 22 cents per gallon. The future economy of the spirit motor depends entirely on this first cost. At the lower rate the cost is about 2 cents per horse-power per hour when using a compound of alcohol and benzine, which gives the best result. Extended trials with various forms of cars in France showed that consumption varied according to the type of vehicle from 0.2 to 0.4 pints per ton mile. In France the production of spirits has reached a very high figure, between 50,000,000 and 60,000,000 gallons, far in advance of the demand; and in addition a large number of agriculturists are at liberty to distil their agricultural products free from duty, so that the figures given do not represent the full production. The reduction of the duty on denatured spirits for industrial purposes considerably relieved the situation.

**The Selling Organization of the German Steel Trust.**

It is evident that our German friends are determined to follow the lead of the United States Steel Corporation in concentrating their selling energies into one unit. American interests are well looked after here by the United States Steel Products Company, under the able direction of Col. Millard Hunsiker. As things are now the component parts of the German syndicate are each separately represented, but the various London agents of the concern have been getting together and the proposal now is that a joint stock company be formed, 11 agents being involved. It is stated with some authority that participation in the scheme will be withheld from those agents who, while representing German works, also sell on commission or otherwise cognate British products. The adhesion of the Phœnix Company to the German syndicate makes matters much easier. It was feared that there was going to be war, whereas there will now be peace and co-operation. By July next it is expected that matters will be in working order.

**The Belgian Steel Syndicate.**

The Belgian Steel Syndicate has become an accomplished fact. With the exception of the Sambre & Moselle Company, all the Belgian steel makers have joined. The following table shows the allotments proposed for the various companies:

| | Tons per month. |
|---|---|
| Société d'Ougrée-Marihaye | 22,500 |
| Société Cockerill | 16,900 |
| Acieries d'Angleur | 11,700 |
| Société la Providence | 11,700 |
| Société de Sambre-et-Moselle | 10,000 |
| Société de Couillet | 9,000 |
| M. G. Boel, La Louviere | 9,000 |
| Société de Thy-le-Chateau | 5,200 |
| Total | 96,000 |

The above is equal to 1,152,000 tons a year. It is worthy of note that the proposed allotment to the Sambre & Moselle works is considerably above the actual output, which hardly exceeds 7500 tons per month, while the participation accorded to the other steel works is, to a remarkable extent, less than their present production. For example, in March last the Providence Works produced 13,000 tons, the Angleur Steel Works nearly 12,900 tons and those of Ougrée over 25,000 tons. It appears that in syndicate promotion it pays to hold out till the last.

S. G. H.

## The Pennsylvania Coal & Coke Company.

Official announcement has been made of the closing of the deal, involving nearly $12,000,000, by which the Pennsylvania Coal & Coke Company, Philadelphia, Pa., have taken over the Beach Creek Coal & Coke Company. By securing the Beach Creek properties the Pennsylvania Coal & Coke Company become the largest holder of bituminous coal lands in the country, controlling upward of 117,000 acres, chiefly in Blair, Cambria, Clearfield and Indiana counties, Pa., containing upward of 1,000,000,000 tons of coal. Upon these lands are located 44 operating collieries, with a daily shipping capacity of 25,000 tons. In addition, the company own 1100 coke ovens, 1200 houses, 1000 railroad cars and numerous electric light and water companies at various points throughout the coal regions. They also control the Hooverhurst & Southwestern Railroad and the North River Coal & Wharf Company, with docks at Port Liberty, in New York Harbor. Upon the completion of the merger the total bonds of both companies outstanding will amount to $11,392,000. The officers are: President, W. A. Lathrop; vice-presidents, T. H. Watkins and C. D. Simpson; directors: R. H. Williams, S. T. Peters, H. G. Lloyd, Robert Mitchell, James Kerr and A. E. Patton.

## National Metal Trades Association Notes.

CINCINNATI, OHIO, May 10, 1904.—Commissioner E. F. Du Brul is spending a week in the East, with headquarters in New York, and Secretary Robert Wuest returned from quite an extensive trip on May 7.

The machinists' situation in Chicago is unchanged, and negotiations with the local business agent are going on.

W. N. Taylor, secretary of the Memphis Machine Works, Memphis, Tenn., advises that their shops are practically filled, and that they are receiving a great number of applications from men desiring work.

The Administrative Council will meet at the commissioner's office in the Union Trust Building, Cincinnati, on May 30 and 31.

John Whirl, secretary of the Detroit Employers' Association, is rather jubilant because of the success his association is meeting with in handling the labor question in that city.

The sentiment is so marked in the National Metal Trades Association against any form of agreement that there is no need of apprehension on that score.

The labor situation at Youngstown, Ohio, has quieted down considerably, and it is not believed there will be any trouble.

The number of certificate men of the association is increasing at a greater rate than the officials expected. The same happy condition of affairs exists in connection with the Labor Bureau.

F. A. Wilson, the secretary of the Boston Labor Bureau, reports that 30 boiler makers, with age, experience and capability varied, have filed applications for employment with him during the past week.

The Chicago Metal Trades Association will hold their meeting and banquet at the Sherman House on the evening of May 27. This meeting will be a most interesting one, since several Eastern gentlemen who are students of industrial economics will deliver the addresses of the evening.

In spite of the fact that Egypt Lodge, No. 665, International Association of Machinists, Du Quoin, Ill., voted to work without contract or condition, the district business agent has ordered them to strike. The local lodge, not caring to subject themselves to the annoyance of a strike, thereupon offered to enter into an agreement satisfactory to themselves and also to the company. This the Blakeslee Mfg. Company were willing to do, whereupon the district business agent insisted upon the strike becoming effective just the same, thereby disregarding the wishes of the local lodge entirely.

There was a little flurry in the pattern making shops of the H. W. Caldwell & Sons Company, Chicago, which was promptly taken hold of by the association.

The annual meeting of the Cincinnati Metal Trades Association, scheduled for last Thursday evening, was adjourned until Thursday of this week, on account of the absence of quite a number of the members.

Frank W. Edmunds, who was for many years secretary and general sales agent for the Troy Steel Company, and later secretary of the Q & C Company, representing the Pennsylvania Steel Company and Maryland Steel Company at Chicago, has been appointed sales agent of the Dressel Railway Lamp Works, with office at 114 Liberty street (Engineering Building), New York.

## New England's All Rail Coal Connection.

BY FREDERICK E. SAWARD.

After many years there is now in the region of fact, as against theory, the development of the New England coal trade all-rail from the mine to the consumer. This is to be accomplished by the more extended development of traffic by way of the Poughkeepsie bridge, that line having been secured by the New Haven road. Fifteen years ago this was completed, and great things were then prophesied in regard to it by every operator in coal, but the New Haven seemed to be wedded to the idea of hauling coal from its coast line ports on the Sound, &c. Now a change has taken place, and it is within a few months only that all-rail trade to New England has taken on importance by every gateway across the Hudson River. The Central New England, as the route referred to has been called, has always done some business, but under its new auspices it will grow to a remarkable extent. The Lehigh & Hudson, the western connection, has recently passed into the hands of the Lehigh Coal & Navigation Company, who are an important factor in the anthracite coal trade from their own resources, as well as from the influence of their connections with the Central Railroad of New Jersey and the Reading, and these two lines are also great carriers of bituminous coal, which forms the manufacturing fuel of New England. In this connection one may note that the hard winter on the Hudson, the cost of float transportation and the delays incident thereto are about to put the Central New England Railroad in the position which it was built to occupy, viz., an important link in the all-rail New England route via the Poughkeepsie bridge. Many thousand more tons of freight than has been usual in the past have gone over the Poughkeepsie bridge during the last few weeks, but the tonnage in the future will be immensely greater. Both the Lehigh & Hudson and the New England will be links in the route, which in the future must attain such importance as to compel one of the large trunk lines to seeks its control.

The news of the purchase of the road by the New Haven was received with much pleasure by the coal men of the East, not that they expected any less rates, but because it would be possible to handle coal so much more expeditiously. The route via Jersey City for all-rail coal certainly has its drawbacks in times of ice and fogs, and the ferry at Newburgh is subject to the same objections. Orders have been issued canceling the handling of freight via Newburgh ferry after May 31, and all freight now coming that way will be routed via Poughkeepsie bridge. Owing to the increase in volume of freight to be handled this way, the New Haven road is very busy strengthening bridges and increasing trackage, sidings, &c. A quantity of coal originating on the Pennsylvania Railroad is now coming via the bridge, rather than its natural routing via Jersey City floats to Harlem River. Deliveries are being made within two weeks of date of shipment, which is much better than we have had via Jersey City for a long time.

In view of the demands of the vessel and barge owners, under a combination, for a higher freight rate, this route has an added interest to all New Englanders. The owners of these craft say that they have never been properly recompensed for their services, and point to the fact that their boats have been used too much for storage purpose to save the shippers the expense of storage room. This it is proposed to stop. The regulations for loading and discharging are reasonable. They allow 10 days for vessels of 1000 to 2000 tons capacity; 12 days for 2000 to 3000 tons; 14 days for 3000 to 4000 tons; 16 days for 4000 to 5000 tons, and 18 days for 5000 to 6000 tons. To show what can be done, take the case of the barge "Kennebec," of 3000 tons, which has just been chartered for a year under terms which require the loading and discharging to be done inside of five days. Up to this time they have been working under the association bill of lading, which is antiquated. It provided for discharging 150 tons a day. Sundays and the day of reporting do not count, so that under the terms of this bill a vessel of 3000 tons would require 24 days in which to unload.

It is not so long ago that the enterprise of the anthracite carriers opened up the New England markets by a system of barge transportation from tide. Barges of a capacity of from 400 to 700 tons and a few of 1000 tons, carried in tows, were sent up the Sound and along the coast of New England. The anthracite coal that passed into the interior was transferred to cars at these points, while consumption immediately along the coast was supplied direct from the barge side. The beginnings in this direction were followed by the construction of much larger barges and powerful ocean-going tugs, making runs outside of Long Island. All the anthracite carriers now have systems of barge deliveries to New England. The better equipped companies have barges ranging in capacity from 750 to 1500 tons. The champions of water transportation could well think that this, as the last stand in the competition between water and rail transport, would offer an economical transportation which the railroads could not equal.

But the students of transportation are now interested in the change which is going on whereby the water route for coal to New England is yielding to the rail route. This plan was first seriously inaugurated by the Delaware & Hudson Company, whose management is alert in the development of its interests. They entered New England by the Albany gateway and claimed for themselves a large part of the market west of the coast and north of the southern Massachusetts line.

The revival of the Poughkeepsie bridge line indicates that the Reading, the Erie, the New York, Ontario & Western, on the one hand, and the New York, Hew Haven & Hartford, on the other, are persuaded that the water route to New England is doomed. We may look for developments on a large scale in this direction. This must be considered a definite achievement for railroad transportation, inasmuch as it is pretty near the limit of a profitable haul, especially when it is against the balance of traffic and is a tonnage that is carried in cars generally unfit for any other form of traffic in the return movement, should there be such a tonnage available.

The Boston and Maine market for all-rail coal is practically monopolized by the Delaware & Hudson and Delaware, Lackwanna & Western. The Ontario & Western do some business through there, but, owing to a freight rate that is unsatisfactory, do not get after the business as they did once. Some Lehigh coal goes there, too, but the percentage is small. On the Boston & Albany road the same coals are sold, and on the New York, New Haven & Hartford, the Erie and Ontario & Western get an advantage on the differentials.

A traffic agreement has been made between the Reading Company and the New York, New Haven & Hartford which may result in transferring more than 500 cars of freight a day from the Pennsylvania Railroad to the Reading lines. The New Haven line will not route freight over the Shore line, except for New York City; it will send it entirely over the Poughkeepsie bridge line and the Central New England. After June 1 the New Haven will abandon its barge route for anthracite at Fishkill Landing. It may take its entire fuel supply from Beech Creek, via Williamsport, over the Reading and Poughkeepsie bridge. It now uses Clearfield coal, carried over the Pennsylvania Railroad.

It was reported last week that a reduced tonnage of bituminous coal was coming forward, and in the trade it is generally believed that if this is more than a transient phase of the situation the market will soon improve. With railroad rates uniform to all and miners' wages upheld by a strong organization, there are certain fixed charges that establish pretty definitely the price at which coal can be profitably sold, and it is known that many new concerns are in no position to stand a season of below cost shipments. If some of these have already shut down it is in line with expectations, and such action on the part of a comparatively small number will do wonders towards improving the market, for as soon as coal ceases to press for sale a sharp demand from buyers will spring up. The soft coal business is very largely a speculation now, and the same rules prevail as in other lines of speculation. When coal is scare and high buyers bid against each other and put the prices higher, while when it is plentiful people won't buy freely, even though their bins are empty, preferring to wait for "lower prices to-morrow."

# HARDWARE.

THERE is danger that those who are active in the movement against the competition of catalogue houses will approach the matter on wrong lines, denounce this method of distribution with too sweeping a condemnation, and attempt too much. Those who are feeling keenly the effect of this intrusion on long established usages may make the mistake of opposing it on principles which will not stand when subjected to calm and reasonable scrutiny, and in ways which, in accordance with the great laws of trade, cannot be expected to succeed. It is therefore important, as the movement is now, for the first time, taking shape, that correct principles of action be recognized and the whole matter put on such a basis as to command the united approval of the trade. Anything unreasonable in principle and impracticable in effort will be doubly injurious, as it will tend to keep judicious and broad minded manufacturers and merchants from giving their co-operation and will also entail the penalty which inevitably follows the infraction of sound principles and the attempting of the impossible. A mistake of such character, however well intentioned, tested by its results, becomes a blunder. A word of caution is, therefore, in order at this stage, when the movement is starting under auspices so full of promise.

It would be a mistake to characterize as illegitimate the general methods of these houses simply on the ground that they sell from catalogues exclusively. Every jobber and manufacturer uses this means of bringing his wares to the attention of the trade, and some have tried the experiment of making the catalogue take the place altogether of the salesmen. The extent to which both these great classes are cultivating mail order business is an indication of the growing place that this means of selling and purchasing goods has in the trade.

The competition whose methods are under discussion, however, instead of going to the trade as in the instances just referred to, go direct to the public and put their catalogues in the hands of consumers whose business they solicit. However disturbing this may be, it must be borne in mind that there is in this nothing which on principle is to be condemned. Manufacturers and merchants, both wholesale and retail, find it advisable frequently to seek a market for their goods in this way. Many a retail merchant issues circulars or catalogues of various dimensions, with illustrations and prices, and thus does on a small scale what a catalogue house does on a large scale. A great many of the multitude of jobbers who have retail departments follow similar methods, and even outside their strictly retail departments use printed matter liberally in cultivating trade from the railroads and other large, and sometimes small, consumers with whom they have or desire relations. Manufacturers, too, find it necessary to resort to this method of bringing their goods to the attention of the trade. The retail trade are often reluctant to do the work which is requisite for the introduction of a new article or of a new line of goods, while the jobbers are proverbially unwilling to undertake the task. Under these circumstances it becomes necessary in many instances for the manufacturer to go direct to the public, not only by personal agents, which is expensive, but by circulars and printed matter. The use of catalogues and circulars to reach consumers is thus sanctioned by the usage of the trade, and even if the retail merchants, the ultimate distributers, are disposed to look askance on this method when used by the jobbers and manufacturers, it is unquestionably legitimate for the retail merchants. In this whole discussion it must be remembered that the catalogue house in the last analysis is only a retailer.

It would again be a mistake to attempt to do away with catalogue houses. Their methods may be subject to criticism and injurious to vested interests. Their way of conducting business may be in many respects disadvantageous to the public and less satisfactory in the long run than the sale of goods from the shelves and warehouses of local merchants. If, however, they desire to carry on business on the lines they have chosen they have a right to do so, and it is probable that this method of distribution, in spite of its disadvantages and disturbances, will continue to exist.

Fortunately, there is little disposition on the part of those active in this movement to fall into the mistakes suggested above. They are taking a broad view of the question, and are reasonable in the positions they take. The part of wisdom is undoubtedly to continue this policy, and to oppose the evils and abuses of the system rather than the system itself. The attempt must be to meet this form of competition in a reasonable and businesslike manner. Much can probably be done to diminish the acknowledged evils under which the trade is suffering, and the concerted action of manufacturers, jobbers and retail merchants will contribute to this end Let it be remembered that the best friends of the movement will be those who look at the matter in a sane, temperate and practical way, and endeavor to find and put into effect remedies for the evils in question. Meanwhile, both jobbers and retail merchants will do well to bear in mind that something of a readjustment of their methods and prices may be necessary in placing themselves in the proper relation to the existing condition of things.

## Condition of Trade.

The usual quiet period in business which is looked for trade about the last of May and during the month of June appears to have anticipated its usual time this year by about two weeks. This, at least, is the prevailing condition in the Eastern portion of the country, where trade has failed to respond to the more favorable weather conditions, as it was hoped that it would. The lack of extended building operations, the laying off of men in the freight departments of the railroads and the reduction, in the number of days per week in the operation of some of the New England factories which manufacture Hardware and kindred goods may be responsible, to some extent, for the lack of snap in business. In the West, especially in sections in which warm weather and showers have taken the place of the cold, dry conditions previously prevailing, the tone of the general Hardware market shows improvement. Garden Tools, Lawn Mowers and Builders' Hardware have been the first to feel the quickening influence of spring weather, but there is a fair movement of general goods. Prices are quite well maintained.

### Chicago.

A decidedly better tone pervades the Hardware market this week. Weather conditions throughout the West have changed for the better, the cold, dry weather giving place to warmth and showers. The change of the weather is reflected immediately in an increased demand

for Rakes, Hoes and other Garden Tools, and jobbers are experiencing some difficulty in securing shipments of these goods from the mills. The scarcity in Screen Cloth is beginning to make itself felt, and while $1.25 is the ruling price to retailers, $1.30 is frequently bid for sizes wider than 36 inches, and indeed for any size where rush shipment is involved. Demand for Screen Doors is also fully up to the ability of the mills to supply. Jobbers and manufacturers are being besieged with requests for quick shipments of Lawn Mowers, and the supply on hand is not sufficient to fill all orders. Trade in Builders' Hardware is picking up. Manufacturers and jobbers earlier in the season did a large and satisfactory business in common lines for stock, and now the demand for special goods is beginning to be a prominent factor. Shelf Hardware shows an improvement over the last two or three weeks. Carriage Bolts, Screws, Tacks, Hinges and the like are in good demand. Repeated efforts have been made by certain interests to stampede buyers into line on Screws by the statement that an advance was to be made. This advance was predicted for last week. A similar advance had been predicted a month ago, but at the last meeting of the makers, we are informed, the subject was not even mentioned. It is probably safe to say, however, that if a change is made in the price of Screws it is more likely to be an advance than a decline. Trading in Wire and Cut Nails is also better than it has been for some weeks, the demand for Cut Nails being limited largely to certain sizes for flooring and shingle purposes. It is unfortunate that there is practically only one producer of strictly Iron Cut Nails, as the demand for Iron Cut Nails is quite pronounced, and it is reported that Steel Nails are substituted for Iron quite generally, the only difference between the Nails being the wording on the top of the keg. Wire products are moving satisfactorily, and in general the Hardware trade is in a prosperous condition.

## NOTES ON PRICES.

**Wire Nails.**—The annual quietness which is experienced in the Nail market after orders have been placed for spring requirements is beginning to be felt. The mills, however, will be kept busy for some time in filling contract orders. The market remains firm in tone. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Jobbers, carload lots | $1.90 |
| Retailers, carload lots | 1.95 |
| Retailers, less than carload lots | 2.05 |

*New York.*—Local demand continues steady and in about previous volume. The call is mostly for the larger sizes of Nails, those used when commencing the erection of buildings. Quotations are as follows: Single carloads, $2.10; small lots from store, $2.20.

*Chicago, by Telegraph.*—Business is falling off, as it does this time almost every year, and no large sales are expected to be made between now and July 1. It has been a good season and the prices which mills have obtained leave them a satisfactory margin of profit. Prices are unchanged, as follows: Carload lots to jobbers, $2.10 per 100 pounds; less than carloads to jobbers, $2.15 per 100 pounds; carloads to retailers, $2.15 per 100 pounds; less than carloads to retailers, $2.25 per 100 pounds, all f.o.b. Chicago.

*Pittsburgh.*—Current demand for Wire Nails is only fair, but the mills are well filled up on contracts for the next several months and are still considerably behind in shipments. The tone of the market is firm and we quote: Wire Nails, $1.90 in carloads to jobbers, $1.95 in carloads to retailers, and $2 to $2.05 in small lots to retailers, all f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days, plus actual rate of freight to point of delivery.

**Cut Nails.**—The meeting of the Cut Nail Association is scheduled for May 19. The demand is fair and mills are making deliveries promptly. For delivery at certain points slight inequalities in prices are reported in special cases. Quotations are as follows for Steel and Iron Nails, in all quarters: $1.75, base, carloads, and $1.80 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate book to point of destination; terms 60 days, less 2 per cent. off in 10 days.

*New York.*—Demand is normal, with a steady call for small lots from store. Quotations are as follows: Carloads on dock, $1.89½; less than carloads on dock, $1.97½; small lots from store, $2.05.

*Chicago, by Telegraph.*—Prices remain unchanged, as follows: Carload lots, both Iron and Steel Nails, Chicago, to jobbers, $1.91½, base; less than carloads, $1.96½. Retailers and large consumers pay 10 cents per 100 pounds above jobbers' prices. Jobbers sell at from $2.10 to $2.30, base, f.o.b. Chicago warehouse, according to customer, size of order, &c.

*Pittsburgh.*—There is a fair demand for Cut Nails, and the mills are able to make prompt delivery. As noted before, there is some slight unevenness in prices of Cut Nails, but for delivery only at certain points. We quote Steel and Iron Cut Nails at $1.75, base, in carload lots, and $1.80 in less than carloads, f.o.b. mill, terms 60 days, less 2 per cent. off in 10 days.

**Barb Wire.**—Mills are still busy, and will be for some months, in filling orders already booked. The volume of new orders shows a considerable falling off. Prices remain firm without change. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Galv. |
|---|---|---|
| Jobbers, carload lots | $2.20 | $2.50 |
| Retailers, carload lots | 2.25 | 2.55 |
| Retailers, less than carload lots | 2.35 | 2.65 |

*Chicago, by Telegraph.*—Mills are still a number of weeks behind their orders on some styles of Barb Wire. The general demand, however, shows a good deal of a decrease, as is to be expected at this time of the year. Prices are unchanged, as follows: Carload lots, Painted Wire, $2.40; Galvanized, $2.70; to retailers, carload lots, Painted, $2.45; Galvanized, $2.75; to retailers, less than carload lots, Painted, $2.55; Galvanized, $2.85; Staples to jobbers, $2.25 for Plain and $2.65 for Galvanized, with 5 cents advance to retailers.

*Pittsburgh.*—General demand for Barb Wire is only fair, but the mills have a large amount of orders on their books, which it will take several months to fill. Prices are firm, but without change. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Galv. |
|---|---|---|
| Jobbers, carloads | $2.20 | $2.50 |
| Retailers, carloads | 2.25 | 2.55 |
| Less than carloads | 2.35 | 2.65 |

**Smooth Fence Wire.**—New business is much lighter than early in the season, but contract orders, which the mills are filling, are keeping them busy. Quotations are as follows, f.o.b. Pittsburgh; terms, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Jobbers, carloads | $1.80 |
| Retailers, carloads | 1.85 |
| Less than carloads | 1.95 |

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

| | 6 to 9 | 10 | 11 | 12 & 12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | Base. | $0.05 | .10 | .15 | .25 | .35 | .45 | .55 |
| Galvanized | $0.30 | .35 | .40 | .45 | .55 | .65 | 1.05 | 1.15 |

*Chicago, by Telegraph.*—The constantly increasing avenues of outlet for the Wire mills, owing to the manufacture of staples and novelties from Wire, instead of other materials, and particularly the substitution of Wire for wood, added to the constantly increasing demand for woven fencing, has placed the Wire mills of the country in a position where they need have no fears for their immediate future. Prices are firm, as may be expected when the mills are pushed to their utmost to keep pace with the demand. Prices remain as follows: Smooth Fence Wire, sizes 6 to 9, $2 per 100 pounds in carload lots to jobbers, f.o.b. Chicago; $2.05 per 100 pounds to retailers in carload lots and $2.10 in less than car lots.

*Pittsburgh.*—New demand is not as heavy as some time ago, but the mills are well filled up on contracts which it will take some months to fill. However, buyers are getting better deliveries than for some time. We

quote as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days; Plain Wire, $1.80, base, for Nos. 6 to 9, in carloads to jobbers, and $1.95 to $2 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14.

**Cordage.**—There are different opinions expressed by various Rope manufacturers regarding condition of trade. Some regard the situation as quiet, while others report a good volume of business. As a general thing, demand is not what is usually enjoyed at this season. It is reported that there is so-called Manila Rope on the market which does not contain any Manila fiber, but is colored to appear like Manila. It is understood that this is quoted at about 9 cents per pound. Quotations on the basis of 7-16 inch diameter and larger are as follows: Pure Manila, 12 cents per pound, with a rebate of ¼ to ½ cent per pound to largest buyers; other grades of Manila, 9 to 11 cents, according to quality; pure Sisal, 9¼ cents, with ¼ cent rebate to largest buyers; mixed Sisal, 8 cents per pound, with no rebate.

**Paris Green.**—There is but comparatively little new business. Some shipments are, however, being made on contracts. Market conditions are unchanged, and the base quotation of 11 cents in Arsenic kegs or casks is general. Most manufacturers are asking the customary advances, but some are naming less than the regular advances on the smaller packages.

**Glass.**—No developments have taken place in the Window Glass market since the middle of April, when a meeting of Window Glass manufacturers was held in Cincinnati, at which time steps were taken toward the formation of the National Association of Window Glass manufacturers. At that time a Committee on By-Laws was appointed, to report at a meeting to be held at Cleveland May 11. The trade are apparently awaiting the results of this meeting before stocking up with Glass. It is reported that but 15 out of 37 Window Glass tanks are in operation in Belgium, owing to a strike of the workers against a heavy wage reduction. The market, it is said, has stiffened considerably in that country and it is thought that prices will advance at least 10 or 15 per cent. As a result of action taken by American manufacturers, it is stated that an importation of foreign Glass has been detained on the ground of undervaluation, not being invoiced at the full foreign market value. It is understood that complaints have been frequently made to the Treasury Department by domestic manufacturers regarding the undervaluation of foreign Glass.

**Oils.**—*Linseed Oil.*—No marked improvement is seen in demand, which is confined largely to small lots. It is thought by some in the trade that the Seed market is being manipulated by the largest holders of Seed and Oil, who will probably have to carry much of both over into the new crop to deter farmers from planting a large acreage this spring. This opinion is arrived at as the result of the recent heavy drop in the price of Seed from no apparent cause. The reduction in the price of Seed made no difference in the quotations for Oil. Quotations are as follows: City Raw, in lots of five barrels or more, 42 cents per gallon; in lots of less than five barrels, 43 cents per gallon; State and Western Raw, 39 to 40 cents per gallon. Boiled Oil, the usual 2 cents advance per gallon over Raw.

**Spirits Turpentine.**—The market advanced ½ cent per gallon during the week, but has dropped back to former figures. Demand is light and confined to small lots. Quotations, according to quantity, in this city are as follows: Oil barrels, 58 to 58½ cents; machine made barrels, 58½ to 59 cents. Receipts in the South are reported light owing to unseasonable weather, which has retarded the new crop.

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THE WATERBURY BRASS GOODS CORPORATION, recently incorporated with a capital stock of $500,000, have perfected temporary organization by the election of the following officers: President, C. S. Dikeman; secretary, J. H. Woodward; treasurer, Charles L. Holmes; directors, these officers and W. W. Magee and Robert F. Griggs. The company are not yet ready to announce their manufacturing plans. From the personnel of the temporary officers it is generally understood that the company will be closely affiliated with the American Brass Company and their allied interests.

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## NATIONAL HARDWARE ASSOCIATION.

THE Executive Committee of the National Hardware Association of the United States held their semi-annual meeting at Boston this week, with headquarters at Hotel Westminster. There was a very full attendance of the Executive Committee and the Advisory Board, with the executive officers, there being but three absentees. Much of the time was given over to the arrangements for the next annual convention, which will be at Atlantic City in November, it being the custom of the committee to devote the spring meeting to this matter, which requires a good deal of working out of detail. A committee was appointed to act with a similar committee from the National Retail Hardware Dealers' Association for the consideration and adoption of measures to mitigate the abuses introduced in the trade by the competition of catalogue houses. A telegram of sympathy was sent to Merchant & Co., Philadelphia, one of the members of the association, in view of the death of Clarke Merchant, whose character was referred to as such as to render his removal a real calamity. Tuesday afternoon the members were the guests of the New England Hardware and Iron Association at an outing at the Brookline Country Club.

Those present at the meeting were: President, Samuel A. Bigelow of Bigelow & Dowse Company, Boston; first vice-president, John C. Koch, John Pritzlaff Hardware Company, Milwaukee; secretary-treasurer, T. James Fernley, Philadelphia; Executive Committee: P. E. Strauss, Fitz, Dana & Co., Boston; J. D. Moore, Moore & Handley Hardware Company, Birmingham, Ala.; W. S. Wright, Wright & Wilhelmy Company, Omaha, Neb.; Frederic Barker, Barker, Rose & Clinton Company, Elmira, N. Y.; Advisory Board: William W. Supplee, Supplee Hardware Company, Philadelphia; H. H. Bishop, McIntosh Hardware Corporation, Cleveland, Ohio; R. A. Kirk, Farwell, Ozmun, Kirk & Co., St. Paul, Minn. The absentees were: Second Vice-President Brace Hayden, Dunham, Carrigan & Hayden Company, San Francisco; R. M. Dudley, Gray & Dudley Hardware Company, Nashville, Tenn., of the Executive Committee, and John Bindley, Bindley Hardware Company, Pittsburgh, Pa., of the Advisory Board. John Freeman of Detroit is no longer a member of the association, having sold out his interest in Freeman, Delamater & Co. of that city. He was a member of the Executive Committee.

The visitors had a very pleasant sojourn in Boston. They had the opportunity to see a good deal of the city and they were given an excellent example of Boston hospitality, the members from that city and others of the trade acting as their hosts.

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## DEATH OF JOHN R. HOAGLAND.

JOHN R. HOAGLAND, president of the Chicago Hardware Company, Chicago, died very suddenly at his residence in that city Thursday morning last, 5th inst. He was 56 years of age, and had been connected with the company for two years. The company had been very successful under his guidance, and while prior to his connection with it he had never been identified in any way with the Hardware trade, his winning personality had made him hosts of friends in the trade. Mr. Hoagland was for many years identified with railroad interests, and was well known among railroad men throughout the country in his capacity as secretary of the Union Station Company, Chicago. He was a graduate of Princeton, and had formerly been president of the Kenwood Club. Mr. Hoagland was born in Ft. Wayne, Ind., and the burial took place there on the 7th inst., the funeral services being held at the family residence in Chicago.

# THE CATALOGUE HOUSE QUESTION.

PREPARATIONS are being actively made for the discussion of the Catalogue House problem in the broadest way at the Atlanta convention. Invitations have been extended by the SOUTHERN HARDWARE JOBBERS' ASSOCIATION and the AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION to some of the most prominent men in the trade, both among the manufacturers and the jobbers. The fact that such representative merchants as E. C. Simmons, S. Norvell and W. R. Belknap, as well as leading manufacturers, are to participate in the discussion indicates the prominent place the subject has taken. Representatives of the NATIONAL HARDWARE ASSOCIATION will undoubtedly be present also, especially as their interest in the matter is shown by the fact that at the meeting of their Executive Committee in Boston this week they appointed a special committee to act in this matter. It is presumed that this insures their active co-operation in the plans which will be formulated and inaugurated at Atlanta. The attitude of the great houses in St. Louis, Chicago, Cleveland, Louisville and Minneapolis who are not identified with any association is regarded with special interest by the trade, and their co-operation is counted upon in all reasonable efforts for the protection of the trade in connection with Catalogue House methods. The following correspondence will be of interest as reflecting the opinions of merchants and manufacturers:

## Hibbard, Spencer, Bartlett & Co.

The following letter from A. C. Bartlett, the president of the great house of Hibbard, Spencer, Bartlett & Co., Chicago, will be read with special interest and approval as indicating their attitude toward the question under discussion:

*To the Editor:* In reply to your favor of the 28th ult., we have observed the discussion in regard to the catalogue house question which has been going on in the columns of your paper and naturally were much interested.

We have frequently expressed our opinion to our customers and others (and have for years tried by our acts to make that opinion evident) to the effect that the purchase of goods by catalogue houses from manufacturers or jobbers at prices below those accorded to other retailers, and their sale throughout the country at prices which would not afford a profit to local dealers, is illegitimate.

The question which the manufacturers and jobbers have to consider is whether it is to their interest and whether they have a moral right to place the catalogue houses in a position to ruin the trade of the established local dealers.

In our opinion there can be but one answer made to that question by those who are considering the future welfare of their business rather than its temporary increase. A. C. BARTLETT, President.

Hibbard, Spencer, Bartlett & Co. are also sending out to the trade the following letter, which further explains their position and at the same time contains excellent suggestions in regard to methods which retail merchants may advantageously employ in combating catalogue house competition:

Through the columns of *The Iron Age* one of our neighbors opened a discussion upon the catalogue house question which has attracted the attention of manufacturers, resulting in criticisms of jobbers and retailers.

As the catalogue house idea originated in Chicago, and as the firms doing a large business are located in this city, the discussion is evidently intended to apply to the Chicago houses in particular, and the manufacturers' criticisms to the jobbers who are so located as to readily supply these houses with goods. We think every manufacturer and jobber in this country should declare himself upon this question, which is of such vital importance to the vast body of retailers. As for ourselves, we do not and will not sell these houses any goods.

In this connection we wish to call the attention of retailers to some methods which have been successfully employed by retail merchants in counteracting the local effects of catalogues:

1. Keeping a larger and better assortment of goods.
2. Displaying them in a more attractive manner.
3. Notifying consumers that any articles which the catalogue houses list and are prepared to ship will be delivered to them at same price (freight or express charges added), of the same quality and on the same cash terms as advertised in the catalogues.
4. Not quietly permitting customers to send their ready cash in payment for profitable goods to catalogue houses, and giving them long time credit upon the staples and unprofitable goods they wish to purchase near home.
5. Selling at fair profits, as nearly as possible for cash, and putting the same energy and push into business that the catalogue houses display.

We believe that the competition which looks so serious can be profitably met by the retail merchants. The jobbers will certainly assist.

## Letters from Manufacturers and Jobbers.

The letters given below represent various phases of the subject as regarded by our correspondents. They all take, it will be observed, an attitude of decided opposition to catalogue house methods, and at the same time contain practical suggestions for retail merchants:

FROM MANUFACTURERS OF TOOLS: We have always had one idea about the catalogue house proposition, and that has been to refuse absolutely to sell such firms any goods of any kind that bear our brand. In other words, we believe in selling our own brands only to what is known as the legitimate Hardware trade, so that the dealer, in selling our goods, will not have to compete in his town and vicinity with the catalogue house. As we look at it, the dealer is a necessity in his community, for, as a rule, he carries a large and complete assortment for the benefit of his trade. As a rule, he is a good citizen, as well as a taxpayer. He is, therefore, deserving of support. The success of the catalogue house, if carried to a full and complete consummation, would mean the ruination of the local dealer. Consequently, we believe that the manufacturers should refuse to sell their factory brands to the catalogue houses.

**Refuse to Sell Them**

We should do everything we possibly can to encourage and support the dealers, even going so far as to assist in educating the consuming trade in the dealers' town and vicinity to patronize home industry. This can be done in a variety of ways, principally by the advertisement and exploitation of the manufacturers' brands among the consumers, and thereby creating a demand which a catalogue house cannot supply. We have steadfastly taken this position for the past six years—ever since the question first came up—so that it is nothing new for us.

**Co-operate with the Retailers**

FROM A LARGE JOBBING HOUSE: We live in a free country, and any manufacturer or jobber is at liberty to sell his goods to whoever and wherever he pleases. Now, if he is so shortsighted as to sell his goods to catalogue houses at such prices as will enable them to sell to the consumer at prices that do not admit of a fair profit, or any profit at all, to the local retailer, who buys the same goods of the manufacturer or jobber, then let the retailer quit selling such goods, for if the retailer is loyal to the manufacturers and jobbers who do not and will not sell to catalogue houses it will not be very

**Let the Retailers Act**

long before the offending manufacturer or jobber will see where his best interests lie, and said offending manufacturer or jobber will soon be very glad again to market their goods through the original channel that these goods were introduced to the trade and to the consumer. Fight fire with fire.

If the manufacturer or jobber finds that certain kinds or brands of goods he used to sell to the retail Hardware trade are conspicuous by their absence on the shelves of the legitimate dealers in the cities and towns throughout the country, it will not be very long before said manufacturers or jobbers find out that their life long friends are selling other brands and makes of goods, and instead of having 100,000 or more loyal customers pushing the sale of their goods they will have to be content to sell their goods through a limited number of catalogue houses. The temptation to some manufacturers and jobbers to sell large lots of goods of certain lines or brands to catalogue houses is so great that some cannot resist it.

**Sell Other Makes**

It is a well-known fact that no manufacturer or jobber owns or controls all the trade, especially when they market the goods that they make or job to the detriment of the legitimate retailers, and the day is not far distant when they will find who their friends really are, and they will quit "flirting" with the catalogue houses and will come back to their "first love"—viz., the legitimate retailer—who has always been loyal to them and has carried their brands of goods in stock and has talked their good qualities and really has been the one to whom the manufacturers and jobbers are indebted for keeping certain brands of goods on the market. Give these offending manufacturers and jobbers enough rope and they will hang themselves.

**Manufacturers Flirting with Catalogue Houses**

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FROM AN EASTERN MANUFACTURER: I think the manufacturer's relation to the mail order and catalogue business is somewhat different from that of the jobber. The manufacturer is particularly desirous to have his goods brought to the attention of the consumer. In the mail order business this is done by illustrating the article, with a short description and price, and it cannot be denied that this system of doing business has met with very great success. In the regular trade the manufacturer has to rely on the jobber presenting his goods to the retail dealer, and on the retail dealer calling the attention of the consumer to the article, and he finds, as a rule, there is a great negligence on the part of the retail dealer in doing this. He is apt to put the goods on the shelf and wait until they are called for. This has necessitated the manufacturer many times to put up goods on easel cards, get out advertising cards, &c. It seems to me that the regular trade has got to adopt new methods to reach the customers, and the retail merchant particularly has got to be educated up to some method, either by advertising or circularizing consumers, to let them know what they have for sale. I receive now and then from book stores a list of new books published, or new editions of old books. Why could not the retail dealer in his locality do something similar?

**Catalogue House Enterprise**

**Retailers' Sluggishness**

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FROM A NEW ENGLAND MANUFACTURER: We assume that the discussion in your columns refers particularly to catalogue houses that sell direct to consumers, although there are several very large houses in this country that sell by catalogue only to the trade exclusively. We do not understand that the latter class are under discussion at the present time. While we do not care to be quoted in this matter, and do not sell any of the catalogue houses, yet it is our personal opinion that the only way that this class of trade can be controlled or partially controlled is for manufacturers to sell them direct under such agreements as they can make with the catalogue houses to maintain a published price on manufacturers' brands of all goods that will afford the retail dealer a reasonable margin of profit—the question of transportation from point of shipment being taken into consideration, which is sometimes lost sight of in a discussion of this question.

**Maintain Prices on Makers' Brands**

The purchaser must invariably pay the transportation charge on goods bought from catalogue houses, not to mention the fact that cash must accompany the order in each and every case, therefore the live, up to date retail dealer ought to keep this fact prominently before his customers, and we are of the opinion that if this is done, the catalogue house price on very many—in fact, a majority—of the lines offered for sale, may not prove very attractive, especially if the purchaser is located several hundred miles from the shipping point. This subject is one that is too great and too vital in our opinion to settle by discussion at Hardware conventions and through the columns of *The Iron Age*, although both of these methods are no doubt desirable. It is the writer's opinion that the retail dealers of this country must wake up, and do business upon strictly business principles, and employ up to date methods, or they will suffer the loss of a great deal of desirable trade, due to the competition of these catalogue houses, managed by the brightest and smartest men in this country.

**Retailers Must Wake Up**

## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

REQUESTS *for catalogues, price-lists, quotations, &c., have been received from the following houses:*

FROM FERGUSON-CARR HARDWARE COMPANY, Elmira, N. Y., who have organized with a capital of $8000, and have just commenced the Hardware, Stove, Paint and Implement busines. Mr. Ferguson has for the past 16 years been connected with the jobbing house of Barker, Rose & Clinton of Elmira.

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FROM THE CARBINE HARDWARE COMPANY, Madison, Ga., who desire catalogues and quotations relating especially to Street Sprinklers, one and two horse.

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FROM W. E. PIERCE & Co., Milford, N. H., wholesale dealers in wooden products, who desire catalogues relating to general Hardware, Machinery and Mill Supplies.

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FROM J. B. MURROW & Co., Waynoka, O. T., who have lately established themselves as dealers in Shelf and Heavy Hardware, Implements, Buggies, Wagons, &c.

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FROM A. M. LEACH, Roseville, Ohio, who has bought the Hardware part of the business of S. P. Zehrung, and will be pleased to receive catalogues and quotations relative to General Hardware, Stoves, Paints, Oils, Glass, &c. Mr. Zehrung will continue in the Roofing, Spouting and Furnace line, and also the manufacture of Bails, &c., for the pottery trade.

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FROM CURRY & BREINER, Roscoe, N. Y., who have commenced the retail business in Shelf and Heavy Hardware, Farm Implements, Stoves, Paints, Sporting Goods, &c.

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FROM E. T. WENGER, Lewisburg, Ohio, who has recently opened up in business as dealer in General Hardware, Stoves, Paints and Oils, &c.

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FROM H. G. KOEHLINGER & Co., Fort Wayne, Ind., who have been incorporated with a capital stock of $20,000, to carry on the Shelf Hardware and Stove business. The company expect to occupy one of the finest stores in the city.

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FROM EDWIN B. KNIGHT, Camden, Maine, who is successor to E. H. Goodale in the Hardware business.

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FROM AUSTIN-BLACK HARDWARE COMPANY, Winfield, Kan., who are successors to W. H. Days & Son.

# FACTORY COST AND BUSINESS METHODS.

## PROFIT SHARING SYSTEM OF BAKER MFG. COMPANY.

THE BAKER MFG. COMPANY, Evansville, Wis., have had in operation for the past four years a profit sharing system, of which we are permitted to give a description. The plan under which the company are working is thus described in their by-laws, adopted February 24, 1899, and amended January 26, 1904:

*By-laws of the Baker Mfg. Company, Evansville, Wis. Referring to Profit Sharing. Adopted February 24, 1899.*

WHEREAS, The Baker Mfg. Company recognize that the earnings of capital and labor are determined by competition, and believe that after both have been paid the prices so determined all surplus earnings should be divided between capital and labor in proportion to the amounts received by each, therefore be it

¶ 1. *Resolved*, That the Baker Mfg. Company increase their capital stock to $400,000, the same to consist of 2000 shares of $100 each to be known as preferred stock, fully paid up, and to be issued to the present stockholders in proportion to the shares now owned by each, and 2000 shares of $100 each to be known as common stock and to be issued as provided in paragraph 6.

¶ 2. The profits shall be divided between the preferred stock and labor in proportion to the earning capacity of each. These earnings are arbitrarily defined as follows:

1. The earnings of the preferred stock shall be a dividend of 5 per cent. per annum, which shall be paid quarterly in advance.

2. The earnings of hour and piece labor shall be the product of the total number of hours employed during any year by the price fixed for such labor per hour. This is not to exclude piece work, but persons working by the piece shall be credited in profit sharing only with the amounts they would have earned in the same time at a fixed price per hour.

3. The earnings of salaried labor shall be the total amount paid in salaries during any year.

¶ 3. The fixing of all wages and salaries, and the hiring and discharging of employees shall be done by the general manager, superintendent or by such other officer as the company may designate.

¶ 4. All hour and piece work wages shall be paid weekly, and all salaries at the close of each month.

¶ 5. To determine the net profit an inventory shall be taken January 1 of each year of all assets, including sinking fund, but no accrued interest; and of all liabilities, including preferred stock, common stock, amounts credited toward the purchase of common stock and sinking fund. The net profit or loss shall be the difference between the assets and liabilities.

¶ 6. The net profit of each year shall be used as follows:

1. To pay a dividend, not to exceed 5 per cent. on the common stock and on amounts credited toward the purchase of common stock. (See paragraph 9).

2. Ten per cent. of the amount remaining shall be paid into a sinking fund, which shall be invested in bonds or other securities easily converted into cash. The said sinking fund shall become a part of the business only in case of a net loss and shall not be used to enlarge the business. Interest accruing thereon shall be considered as part of the regular income of the company and not added to the sinking fund.

3. The remainder of the net profit shall be divided between all the persons regularly employed in the manufacturing business and the preferred stock in proportion to the recognized earnings of each. (See paragraph 2.) Fifteen per cent. of this division shall be paid in cash and 85 per cent. in the common stock of the company. (See paragraph 9.)

¶ 7. Should there be a net loss in any year's business there shall be no dividend on the common stock or on amounts accredited toward same, no profit sharing, and an amount equal to the loss shall be drawn from the sinking fund to restore it. In case the sinking fund is not sufficient to pay the loss there shall be no profit sharing until the loss in excess of the sinking fund is fully restored.

¶ 8. Any person who shall have been in the regular employ of the company for 4500 hours during 100 consecutive weeks shall thereupon begin to participate in profit sharing, provided he does not quit the employ of the company, or is not discharged, prior to January 1 of any year.

¶ 9. When there shall be an amount due to any person entitled to profit sharing less than $100 it shall be entered to his credit on the stub of the stock book, but the certificate attached thereto shall not be made out or issued until amounts have been entered to fully pay up a share. But after credits have been entered to the amount of $75 or more the balance may be paid in cash and the share issued fully paid up. Should any person wish to dispose of credits less than $75 the same must be referred to the directors for their action.

The results of the plan above described are referred to as very satisfactory, as indicated in the figures given in the accompanying table A, which shows the working of the profit sharing plan in the years 1899-1903 inclusive. In explanation of this table it may be stated that on January 1, 1899, the company had a paid up capital of $200,000, on which they agreed to pay a dividend of 1¼ per cent. quarterly in advance. The net gain in 1899, after paying the individual dividends as above and all other expenses, was $22,477.18, the amount which entered into the profit sharing scheme. Ten per cent. of this amount, $2247.72, was paid into the sinking fund, the use of which is described in the by-laws above given, paragraph 7; the balance was divided in profit sharing, 15 per cent. in cash and 85 per cent. in the common stock of the company. This division of profits increased the earnings of capital and labor about 60 per cent. For example, a man who had earned $600 in wages in the year 1899 received in profit sharing an increase of 60 per cent., or $360, and the preferred shareholder, whose 5 per cent. dividends amounted to $600, received the same as the laborer in the profit sharing, increasing his 5 per cent. dividend on his preferred shares to 8 per cent. The table in the same way shows the amount distributed in the subsequent

*Table A.—Summary of Operation of Profit Sharing Plan.*

| | Net gain. | 10 per cent. to sinking fund. | 15 per cent. of balance paid in cash in profit sharing. | 85 per cent. paid in common stock. | Percentage of increase in earnings of participants. |
|---|---|---|---|---|---|
| 1899.. | $22,477.18 | $2,247.72 | $3,034.41 | $17,195.06 | 60 |
| 1900.. | 37,275.41 | 3,727.54 | 5,032.18 | 28,515.69 | 83 |
| 1901.. | 35,366.09 | 3,536.61 | 4,774.42 | 27,055.07 | 74 |
| 1902.. | 44,412.72 | 4,441.27 | 5,995.71 | 33,975.74 | 98.45 |
| 1903.. | 30,487.61 | 3,048.76 | 4,115.51 | 23,320.77 | 69.17 |

*Table B.—Detailed Exhibit of Operation of Profit Sharing Plan.*

| Year. | 1899. | 1900. | 1901. | 1902. | 1903. | 1904. |
|---|---|---|---|---|---|---|
| Invoice January 1 | $208,618.08 | $228,189.74 | $257,043.66 | $286,570.89 | $327,700.78 | $352,400.35 |
| 10 per cent. of wages paid in cash | 2,905.52 | ..... | ..... | ..... | ..... | ..... |
| Preferred shares at par | 200,000.00 | 200,000.00 | 200,000.00 | 200,000.00 | 200,000.00 | 200,000.00 |
| Surplus | 5,712.56 | *5,712.56 | ..... | ..... | ..... | ..... |
| Common stock outstanding | ..... | ..... | 17,426.69 | 43,074.77 | 70,262.05 | 102,817.68 |
| Common stock 5 per cent. dividend | ..... | ..... | 871.33 | 2,153.73 | 3,513.10 | 5,140.88 |
| Cash to preferred shares in profit sharing | ..... | 904.75 | 1,240.50 | 1,107.99 | 1,476.79 | 1,037.89 |
| Common stock to preferred shares in profit sharing | ..... | 5,126.94 | 7,029.50 | 6,278.61 | 8,368.25 | 5,879.45 |
| Cash to labor in profit sharing | ..... | 2,129.66 | 3,674.90 | 3,666.43 | 4,568.95 | 3,080.19 |
| Common stock to labor in profit sharing | ..... | 12,068.12 | 20,824.44 | 20,776.46 | 25,557.46 | 17,441.32 |
| Total amount in Sinking Fund | ..... | 2,247.71 | 5,976.30 | 9,512.90 | 13,954.18 | 17,002.94 |
| Grand total | ..... | $228,189.74 | $257,043.66 | $286,570.89 | $327,700.78 | $352,400.35 |
| Percentage that profit sharing increased earnings | ..... | 0.603169 | 0.827 | 0.73866 | 0.9845 | 0.6917 |
| Dividends to preferred stock, including profit sharing | ..... | 0.0801581/2 | 0.09135 | 0.086933 | 0.099225 | 0.084585 |

* Paid to preferred shareholders.

years and the increase in the amount received by those who participated in the profit sharing of 83 per cent. in 1900, 74 per cent. in 1901, and 98 per cent. in 1902.

We also give a more detailed table, B, showing the operation of this profit sharing plan in the years under review. In explanation of this table it will be borne in mind that by the amount of invoice is designated the resources of the company in excess of all liabilties except the capital stock. If the company have added buildings, machinery or stock they issue common stock against about 75 per cent. of it. The balance is paid in cash to profit sharers or goes into the sinking fund.

The Baker Mfg. Company refer to their plan as having increased the earning power of each man, partly because of the manner in which it has encouraged increased industry and partly because of the care taken in saving waste. It has been attended by the further advantage that the company have had no labor troubles, inasmuch as their workmen are practically partners in the business.

# Letters from the Trade.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### The Sale of Builders' Hardware.

FROM A NEW YORK CORRESPONDENT: In your issue of April 28 "X. Y. Z." tells a story in plain, unvarnished language that is known to every retailer in New York City who ever tried to sell Builders' Hardware. When a manufacturer has five or six cases of Hardware in his basement marked for a dealer he appears very anxious to get them out of his way, even though the understanding may be that the job is not ready for the goods. He telephones and writes to Mr. Dealer to come and take them, as he is crowded for room, and, whether he takes them away or not before he can use the goods, he will find them charged to him on the last day of the current month, and, when 30 or 60 days comes around he is expected to pay for them. If he does not come to time he is told, in a not very pleasant manner, either, that he must, or else there will be trouble.

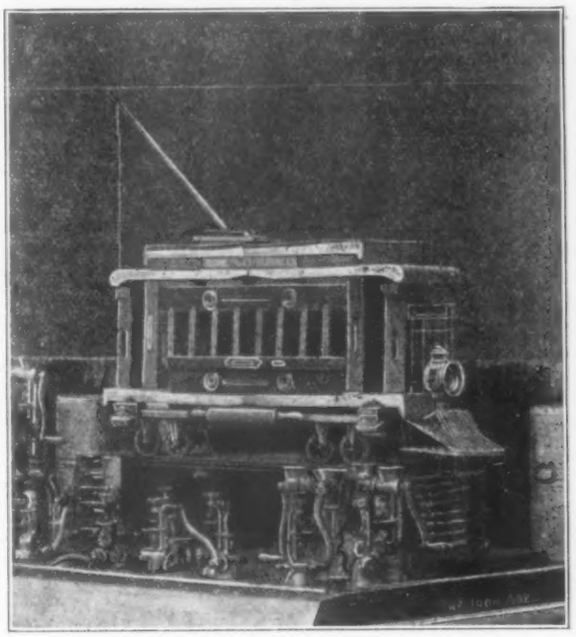
Not so with "General" Contractor and Builder (always salute your superiors). His instructions are carried out to the letter, and he does not get a bill for the goods until the last Screw is delivered, which may be 90 days after the bulk of the goods are at the building. Thereupon he might hand out some cash on account or a 90-day note and a glowing promise for the balance. I imagine that the reason for this leniency is, because "General" Contractor and Builder has so much that can be levied on (a desk and a chair in a 6 x 8 office on the top floor of an office building), or his equity in the building, which unknown quantity is usually eaten up before the Hardwareman gets around. On the other hand, the dealer who usually has anywhere from $10,000 to $100,000 worth of stock on his shelves is hounded and pounded for payment long before he ever sees a cent of the money coming to him. So you will readily see that, according to the manufacturers' scales of justice, the man with nothing to him but his clothes and office furniture (those that carry their business in their hats don't require office furniture) weighs heavier in the balance than the dealer with stock on his shelves.

Another pleasant thing for the dealer to discover: After he knows that Mr. Manufacturer has taken the order from the Contractor for the Builders' Hardware, he figures that he could at least sell the Nails, Sash Weights, Sash Chain, &c., required. Upon investigation he finds that those orders have been given out to the manufacturer along with the rest, and at prices that stagger him. He thereupon goes back to his store and begins to wonder what he is in business for.

But the feature of the Builders' Hardware business that caps the climax is, when a manufacturer comes to you, and says: "So and So is doing a certain job and our goods are specified, now Mr. Dealer I can put you in the way to get this work, and we will work together on it, we will sell the goods to you and you sell to him and collect (?) from him." Then is when Mr. Manufacturer shows his fine Italian hand. He knows the Contractor is not a safe risk; if he thought he was, he would never come to Mr. Dealer with the proposition. If the deal goes through the manufacturer gets his goods in the building, gets his money from the dealer, and the dealer he gets it in the neck.

## A HARDWARE TROLLEY CAR.

THE centerpiece of a very attractive window display made several months since by Wright-Dana Hardware Company, Utica, N. Y., was the trolley car shown herewith. The car was labeled "Rome and Little Falls," and at night was illuminated by incandescent lights. The floor and roof of the car were of Washboards. Carpenters' Levels constituted the body of the car, while Folding Rules served to define the window spaces. The trolley arm was a Corn Popper Handle, a Spiral Door Spring acting as the spring. The car wheels were Truck Casters, and the rails were Parlor Door Track. Rolling Pins furnished the compressed air tank, and Metallic Match Boxes the vestibule steps. A Carriage Lamp distinguished itself as the headlight, while below it was the fender, consisting of a Wire Broiler and Soap Dish.



## AMONG THE HARDWARE TRADE.

The Hardware firm of Leach & Wishard, Spencer, Iowa, have dissolved, F. M. Wishard being succeeded by H. H. Thompson. The new firm will be known as Leach & Thompson.

The location of E. E. Griffin, Hardware merchant, to whom reference was made in an item in a recent issue, is West Derry, N. H., and not West Derby, as a typographical error made it.

The Wetumka Hardware Company have succeeded Richards-Boyle Mercantile Company in Wetumka, I. T., in the Hardware, Stove, Tinware, Wagon and Buggy, Implement, Sporting Goods, Plumbing, Tinning, Harness and Saddlery business. The new proprietors expect to add 5000 square feet to the former floor space.

Baird Hardware Company, wholesale and retail merchants, Gainesville, Fla., have recently let a contract (to be completed by June 15) for an extension of their present facilities, as follows: Two-story brick warehouse, 33

x 60 feet; two-story office, to be part of their present store, 20 x 25 feet, and one-story oil storage room. The steady growth in their business has made these enlargements imperative, and when the additions are completed the Baird Company will have nearly 27,000 square feet of floor space. The company have a warehouse, 80 x 150 feet, on the railroad tracks, which affords them facilities for the economical and expeditious handling of merchandise.

J. L. Elam Hardware Company have disposed of their Walla Walla, Wash., business to the Drumhiller Hardware Company, who have taken possession. The Elam Company still retain their business at Milton, where they carry Hardware, Stoves, Tinware, Agricultural Implements and Vehicles as heretofore.

Hawes-Owsley Hardware Company will commence the wholesale and retail business in Elberton, Ga., about June 1.

W. M. McGibbon has lately established himself in the general Hardware and Agricultural Implement business at Gibbon, O. T.

McKinney Bros. are successors to the Ferrier Store in Kirklin, Ind., dealers in Hardware, Stoves, Tinware, Paints, Farming Implements, Sporting Goods, &c.

The firm of Schwedhelm & Winter, dealers in Hardware, Stoves, Paints, Sporting Goods, &c., Bancroft, Neb., have dissolved partnership, Mr. Winter disposing of his interest to the senior partner, F. S. Schwedhelm, who will continue under his own name.

Schmidtke & May Company, Sawyer, Wis., have been incorporated with a capital stock of $20,000, to carry on the wholesale business in Agricultural Implements. They will also handle light Hardware.

Blakeney-Brooks Hardware Company, Paris, Texas, have increased their capital stock from $50,000 to $100,000. The company handle Hardware and Mill Supplies at wholesale exclusively.

## DEATH OF JAMES E. TAYLOR.

JAMES E. TAYLOR, president of the Belcher & Loomis Agricultural Tool Company, and formerly treasurer and agent of the J. Stevens Arms & Tool Company, died at his residence at Chicopee Falls, Mass., Tuesday, May 3, aged 75 years. Mr. Taylor was born at Chicopee Falls, January 18, 1829. His first business experience was with his father, Sylvester Taylor, who was in the meat business. Two years later he became manager of a large mining company in California and invested in mines in that State and worked them until 1855, when he returned to Chicopee. In partnership with a brother he went into a general merchandise business, making a specialty of Musical Instruments and Sewing Machines. He sold out in 1864, and for a year was interested in the Ray & Taylor Paper Collar Company. He next purchased an interest in the J. Stevens Arms & Tool Company, and for a number of years was agent and treasurer of that corporation.

ORRIN WILLIAMS, for half a century a prominent Hardware dealer at Augusta, Maine, died in that city May 3.

THE PERFECT SLIDING DOOR COMPANY, Bridgeport, Conn., have made arrangements with McRee Green, De Menil Building, St. Louis, Mo., to act as general distributers for them for Missouri.

W. CLINE, JR., is carrying on a manufacturers' agency business at 126 North Calhoun street, Baltimore. Among manufacturers represented by Mr. Cline in Baltimore and Washington are Parker Wire Goods Company, Worcester, Mass.; Hall & Carpenter, Philadelphia; Morgan Sash & Door Company, Chicago, and Hartwell Mfg. Company, Huntingburg, Ind.

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## PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London Office; and at the same time to call our attention to any new goods or additions to their line, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

THE BERGER MFG. COMPANY, Canton, Ohio: Catalogue illustrating Lanterns, Headlights, Street and Hanging Lamps, Glass Oil Cans, Continuous Roofing Tin, Metal Ceilings, Expanded Metal Lath, &c.

AMERICAN FORK & HOE COMPANY, Cleveland, Ohio: Illustrated catalogue relating to special hand Garden Tools manufactured by the company.

THE MAGNETIC CUTLERY COMPANY, 1003 Arch street, Philadelphia, Pa.: Illustrated circulars of advertising and souvenir Pocket Knives.

MILLERS FALLS COMPANY, Millers Falls, Mass., New York warehouse 28 Warren street: Catalogue B, pocket edition, which is a small reproduction of their regular catalogue. It describes the Tools and Machines manufactured by the company.

J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass.: Illustrated catalogue No. 51, embodying all recent additions to their line of Firearms and accessories in Single and Double Barrel Hammer and Hammerless Shotgun styles, including the Little Krag, No. 65, the company's latest Rifle. The catalogue will be sent to applicants forwarding the company 4 cents to cover postage.

BERGER BROS. COMPANY, 237 Arch street, Philadelphia, Pa.: Catalogue and price-list devoted to Tinners' and Roofers' Supplies, Galvanizing and Copper Cornice Work, Malleable and Gray Iron Castings, Tinning, &c.

THE MIDLAND IRON WORKS, Racine, Wis.: 1904 illustrated catalogue showing their Wilbern Adjustable Door Hangers, Gravity Fire Door Equipments and other Hardware Specialties. The Door Hangers, with their vertical and lateral adjustment features, are illustrated in detail, as are also the Wilbern, Underwriters' and Racine Fire Door Hangers and Equipments.

THE INDESTRUCTIBLE POST COMPANY, Chicago, who some time ago bought out the post department of the Inland Steel Company, have issued their first catalogue, which describes their Posts in detail, including Line Fence Posts, End Fence Posts, Gate Fence Posts, Corner Fence Posts, Grape Vine Line and End Posts, Ornamental Line and End Fence Posts, Street Sign and Hitching Posts, and gives a number of illustrations showing the adaptability of the Indestructible Posts to a great variety of uses.

## TRADE ITEMS.

THE annual meeting of the Pacific Coast Hardware and Metal Association will be held on July 6, 7 and 8. The members were so well pleased last year with Santa Barbara as a meeting place that this year's gathering will be held at the same point, the Hotel Potter being headquarters. A large attendance of members from up and down the coast is expected, as topics of vital interest to the entire Pacific Coast Hardware and metal jobbing trade will be discussed.

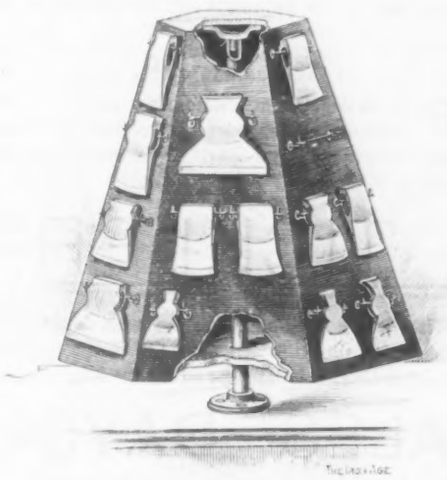
A. LESCHEN & SONS ROPE COMPANY have been compelled to seek larger quarters in New York City and have taken the large offices at 163 and 165 Washington street, where they have facilities for carrying a much larger stock than in the past. Their large new manufacturing plant and main offices are located at St. Louis, Mo., and their other branch offices at Chicago, Denver and San Francisco. The company manufacture all grades and kinds of Rope, and also Hercules and Patent Flattened Strand Wire Rope. They also furnish Aerial Wire Rope Tramway Outfits of all kinds, and likewise Incline Surface and Underground Wire Rope Haulage Outfits.

THE MERIDEN CUTLERY COMPANY, manufacturers of Fine Table Cutlery, Meriden, Conn., have just removed their New York branch from 88 Chambers street to 10 Warren street, where they have larger and better accommodations for displaying fine Carving Sets and the large line of other Table Cutlery they produce, and also more room for storing stock from which to make hurry deliveries. They have leased a part of the street floor and basement at the above address from J. C. McCarty & Co., who retain the remaining space.

THE style of the Phœnix Steel Wire Broom & Brush Company, Chicago, has been changed to the Phœnix Brush & Mfg. Company.

## REVOLVING AXE RACK.

BELL & CAMPBELL, Lewisburg, W. Va., have used for several years the revolving Axe Rack shown herewith, which they refer to as a very convenient method of displaying this line and as increasing the sale of the goods. The rack consists of 1-inch boards, and is about as broad at bottom as the width of counter on which it



*Revolving Axe Rack.*

stands. There are six sides or panels, each about 3 feet long. A porch support is screwed to the under side of the top of the rack, connecting with a 1-inch pipe, which runs through the rack and is screwed into a floor flange which is firmly secured to the counter. This permits the revolution of the rack, as the pin on the porch support moves easily in the pipe, while the rack is rigidly held in place. The top board of the rack is about 10 or 12 inches wide. For holding the Axes in place on the panels No. 11 or 12 galvanized wire, bent as shown, may be used in connection with 1¼-inch brass screw hooks. The capacity of the rack is 24 or more Axes. It is obvious that one or two of the panels may be used to display Handled Axes.

## LUFKIN RULE COMPANY'S NEW CATALOGUE.

THE LUFKIN RULE COMPANY, Saginaw, Mich., and 280 Broadway, New York, have just issued catalogue No. 7 of 60 pages, illustrating their complete line of Measuring Tapes, Machine Divided Steel Rules, Folding Flexible Pocket Steel Rules, Pattern Rules, Hickory Board and Log Rules, Log Calipers, Steel Calipers for taking log diameters, Lumber Gauges, Beaded Boot Calks, the Perfection Glass Cutting Board, and a number of other articles, many of which are entirely new to the trade.

The Shotwell, Tucker & McGinn Company, Skaneateles, N. Y., have been incorporated with a capital of $15,000, to conduct a General Hardware, House Furnishing Goods, Plumbing, Tinning and Electrical business. The directors are William J. Shotwell, George W. Tucker, John J. McGinn and Edward R. Krebs, all of Skaneateles. William J. Shotwell is president, and George W. Tucker, secretary and treasurer.

# Trade Winning Methods.

*This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.*

*A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

## GRAND OPENING OF AN ENTERPRISING OHIO FIRM

THE "Seventh Annual Grand Opening and Sales Days" of the Wooster Hardware Company, Wooster, Ohio, was announced in a pamphlet of 24 pages, the front cover of which is shown in the accompanying illustration. The pamphlet was closed, as indicated, by use of the "Tickler" shown. After the title page there is the following announcement in regard to the opening and the use that is to be made of the "Tickler and Hand":

FOLLOWING a custom original with us several years ago, we herewith send you that part of a whip which, to suit our purpose, we call

A TICKLER

With it we are pleased to extend a hearty invitation to attend our Seventh Annual Grand Opening and

SALES DAYS

OF BUGGIES, FARM IMPLEMENTS AND HARDWARE, ON

MARCH 24, 25, 26, 1904

Bring with you the "Tickler and Hand" attached and present it to one of our clerks in our Buggy room and we will give you a nice Buggy Whip free of charge as a token of our appreciation for your presence and good will. Do not return the booklet, only the "Tickler and Hand" *must be returned on any of the above dates* or the whip cannot be given. Yours truly.

WOOSTER HARDWARE CO.

In the pamphlet reference is prominently devoted to Vehicles and Buggies, on which they offer a discount of 10 per cent. from the regular retail price during the "opening" days. Harness and Agricultural Machinery and Fencing are lines which are especially emphasized in the pamphlet.

**Catalogue House Challenge**

Their announcement in regard to their methods of treating the catalogue house problem is interesting. It is made in the following terms:

**Our Prices vs Catalogue Prices**

*We will meet any Catalogue House price when proper specifications of goods we are to meet are furnished.*

MORE THAN THAT: *If we cannot show a better Buggy for the money than the Catalogue House we will order the catalogue job for you and we will pay the freight.*

*"And that will tickle you."*

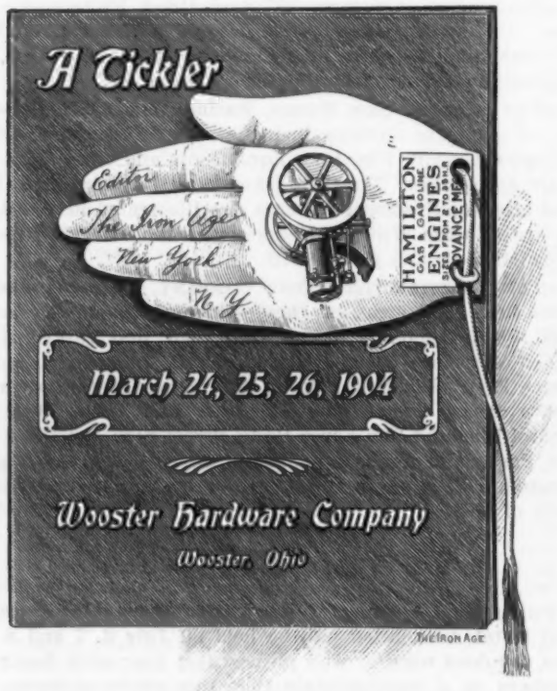
March 24, 25 and 26, 1904.

Six thousand of the "Tickler" pamphlets were printed and distributed by mail three weeks prior to the event. The firm also made systematic use of the advertising columns of all the county newspapers, so that by March 24 the people of Wooster and surrounding places were thoroughly posted as to the affair, and many of them were looking forward eagerly to a visit to the establishment whose enterprise had excited their interest and curiosity.

**Method of Publicity**

The firm advise us that the opening was a great success, throngs of people visiting the store during the three days of the special sales. Besides selling thousands of dollars' worth of Farm Implements, Buggies and Hardware generally, the special sales made an impression on the public which will doubtless be the means of adding materially to the number of their regular patrons, while the white whips now met with in all parts of the county are a constant reminder of the enterprise and business of the firm.

On the evening of March 25 John C. Schultz, senior member of the firm, entertained the traveling men with




whom they have business relations at his home. A splendid dinner was served, after which a number of very interesting informal addresses were made. During the course of the evening C. S. Stout of Toledo, on behalf of the assembled guests, presented to Messrs. Schultz, Christy and Cooley, members of the firm, each a fine silk umbrella. Mrs. Schultz was also remembered with an elegant cut glass water set.

**Entertaining Traveling Men**

This entertainment of traveling men by a retail concern is somewhat unique and speaks well for the pleasant relations which must exist between buyer and seller. The affair was held on the night of the second day of the opening, and was partly designed to express the firm's appreciation of the presence and assistance of the traveling men during the three sales days. Primarily, however, it was intended to illustrate the confidence the firm reposed in the men from whom they buy their goods, and it is safe to assume that the feeling thus eloquently

shown is heartily reciprocated by the knights of the grip. Certainly the relations between the two classes are rendered more pleasant, they understand each other better, and the goods purchased, to say the least, will cost no more than if ordinary conditions prevailed.

## ADVERTISING METHODS OF A NEW YORK MERCHANT.

L. G. Mattison, Newark, N. Y., issues a catalogue of 48 pages which is somewhat of a departure from the usual trade catalogue in that it is interspersed with a good deal of humor, pictorial and otherwise. Mr. Mattison concedes that his peculiar style of catalogue does not attract trade so quickly or in the same manner that a bargain circular would, but its effects are ultimately observed in the general increase of good feeling and confidence on the part of his patrons and, as a natural course, of sales.

Mr. Mattison's catalogues are distributed throughout the village by an elderly man, who has instructions to ring the door bell or knock at each house and wait until some one comes to the door, to whom the book is handed in a manner that suggests that it is a thing of importance. If no answer is made to the summons the distributer is directed not to leave a copy on the premises. Mr. Mattison believes that good things in advertising are cheapened by being thrown on door steps.

**Distributing the Catalogue**

His mailing list is prepared from the rural delivery routes and lists which are printed and hung in the lobby of the post office. He has a rural mailing list of nearly 2000 names. His country friends, he says, devour the advertising matter more readily than the village people, so he endeavors to entertain them a little.

**The Mailing List**

Touching on the subject of integrity in advertising, Mr. Mattison favors us with the following interesting observations:

**Integrity in Advertising**

To those of us who occasionally take a little time for reflection there appears to be a whole lot of Dr. Jekyll and Mr. Hyde business in the modern methods of advertising. We all know of the man who advertises, and advertises as the angels of heaven might advertise, and is a villain still. And we also know of the merchant who is a good citizen, a good neighbor and a respected man, who will lie without limit in his advertising.

I picked up a circular the other day stating that an exhibition of baking would be given at a certain store where a particular Range would bake twice the amount of bread in one-half the time of any other Range, and, strange to say, the merchant who had these bills struck off and scattered around town is considered a good business man and a respected citizen.

Some time ago a farmer customer of ours came into the store, and said: "Well, I have bought a Stove." "What kind?" I asked. "Oh, one of them Steel Ranges the fellows are driving around the country with!" he replied. "Well," I said, "didn't I tell you that we would give you just as good a Steel Range as those fellows at about one-half the money?" "Yes," he said, "you did." "Then why didn't you buy a Stove of us?" "Well, they convinced us that their Stove was the best." We were up against this fact. They convinced him, and we did not. Our word was put in the balance with that of an unscrupulous rascal, and was found wanting. Now, I want to make this point: The farmer had never caught the man who sold him the Stove in a lie. Had he, in the years he had known us, after absorbing our advertising matter, and listening to our store talk, come to not half believe what we told him? I think that was the fact. Why should we not advertise the truth? When we think of it, why should we take the methods of rascals to help us in trying to do a legitimate business? A business takes on character the same as an individual, and the thought that enters into the advertisement helps form the character for the business, and character sticks to a business in a way that is sometimes thoroughly provoking. It is a case of the sins of the father being visited on the children to the third and fourth generation.

**They "Convinced" Him**

**Business Takes on Character**

I thoroughly believe that the Hardware merchant who sticks to the truth in advertising and cuts out the superlatives will, if he has the other necessary qualifications, build up a business that cannot be undermined, and have the full confidence of the people.

## COMPILATION AND USE OF RETAILERS' MAILING LIST

H. F. HERTZOG, Reading, Pa., issues a catalogue primarily devoted to Seeds and Farm and Garden Supplies, but also calling attention to a wide variety of other goods. Mr. Hertzog advises us that the catalogues or other printed matter which he issues are principally distributed by means of the mails, but quite a number are given away daily to customers in the store. Nearly every month something in the way of advertising literature is gotten up relating to different lines, so that the store and business are brought frequently to the attention of patrons past and prospective. Mr. Hertzog refers to this as the best method of gaining enviable notoriety that he has ever tried. At the outset he employed a man at quite an expense to gather the names and addresses of people in the rural territory tributary to Reading. In this way, as well as through newspaper advertising and the enterprise of the store clerks in securing the addresses of new customers who visit the establishment, a mailing list comprising about 1500 names, to which accessions are constantly being made, has been compiled. A considerable mail order business is done through the medium of the catalogues, and the volume of trade of the house is steadily developing.

**Circulars Issued Monthly**

**1500 Names on Mailing List**

## NEW ENGLAND HARDWARE DEALERS' ASSOCIATION.

THE NEW ENGLAND HARDWARE DEALERS' ASSOCIATION met at the rooms of the Boston Merchants' Association, Tuesday, May 3, and adopted a memorial to the late James A. Farless of Boston, secretary of the association from its beginning. The memorial includes an account of the last sickness of Mr. Farless and of the funeral services. Included in it are resolutions setting forth the esteem and respect with which Mr. Farless was held by his associates and by the local Hardware trade in general, both retail and wholesale. The memorial will be printed and distributed to the members of the association.

The meeting elected F. Alexander Chandler of the Chandler & Farquhar Company of Boston, formerly assistant secretary, as secretary to fill the vacancy caused by the death of Mr. Farless. The office of assistant secretary will probably be abolished by a change in the by-laws. Ten new members were admitted to the association, which is an indication that the new policies outlined at the annual meeting are meeting with approval in the retail trade.

## CARY SPRING WORKS.

CARY SPRING WORKS, 240-242 West Twenty-ninth street, New York, are now occupying the entire building, five floors and basement, which much increase their producing facilities. They are equipped to manufacture almost any kind of Springs in flat, spiral and helical, and all kinds of small, odd shaped machinery Springs. They are constantly enlarging and improving on old methods with a view to keeping the plant modern in every respect. They also carry a large assortment of Steel Wires, flat and round, and Brass and Phosphor Bronze Wire, round, as well as a line of Music Wires.

T. F. DE GARMO is about establishing himself in Chicago as Western representative of the Flannery Bolt Company, manufacturers of the Tate Flexible Staple. It is not yet announced where Mr. De Garmo's office will be.

# BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, NORFOLK ST., LONDON, W. C.

### The Week's Hardware Trade.

THE recovery in the British Hardware trade, which has now been observable for about a month, continues. Business is still comparatively small, and there is no speculative buying; but, none the less, orders are more easily obtained, and factories are running more regularly. As spring comes the trade in building materials and Agricultural and Horticultural Implements improves. We have had delightful spring weather here, off and on, for about three weeks, and this has had some share in the improvement in trade. Carriage Iron Work, Naval Hardware, both Brass and Iron, Nuts, Bolts, Nails, Rivets, Ship Lamps and Fishing Tackle are selling well, but the demand for furnishing and ornamental goods is below average. The Seamless Steel Tube makers are busy catering to the wants of the Cycle manufacturers, but prices, though better than they were, are not remunerative. Otherwise, the Tube trade is rather quiet, but Rolled Metal Sheets and Wire are going freely into consumption, and there is a steady and growing demand for special metals for engineering purposes. There is some slight improvement in the Gun trade, both on home and foreign account, some good orders having recently come to hand from Australia and South America. Wrought Iron Hollow Ware, both plain and galvanized, is in good request, the orders received during the week running largely upon Corn and Dust Bins, Boiler Fillers, Kettles, Tanks and Watering Pots. Brazil Hoes have been going out in rather heavy lines lately, but the Axe branch is quiet. Good orders have come in from India, South America and the West Indies for Forks, Shovels, Picks and Matchets, but orders in these lines from South Africa show a marked contraction. Vises, Anvils and Carriage Axles are selling well and give steady employment, but for Nails, Chains and Rivets there is room for improvement. Light Iron founders are steadily engaged. Makers of Iron Fences and Hurdles are busy, and the Lock trade is, as I have so often reported before, good in the better qualities, but poor in the medium and common qualities. The Chain and Anchor smiths are turning out a fair amount, and the Edge Tool makers are doing well.

In Sheffield overtime is being worked in the shops where Spades and Shovels are produced. File manufacturers report trade as much brisker than for some time past. The demand for Tool Steel continues good, but the high price and comparative scarcity of Tungsten are making their effect felt. Against this story of improving trade it must be mentioned that the slackness in the Cutlery and Plate trades continues unrelieved. There is a lot of distress and privation among skilled craftsmen in these trades. As far as can be made out from somewhat conflicting reports, it is the deadness of the home market, which, after all, has always been the most important consideration in these industries, that is to account for the falling off of employment, and it is only natural to find that industries producing luxuries, or, at any rate, commodities which are not prime necessities, should feel the diminished purchasing power of the community more extensively than other industries.

### Lawn Mowers and Price Maintenance.

Two years ago I drew the attention of American Lawn Mower manufacturers to the fact that the price maintenance scheme agreed to by the British Lawn Mower manufacturers might be utilized by American makers to their own advantage. It is now evident that attempts are being made to get round the price maintenance agreement which obtains among the British makers. Thus, the Civil Service Supply Association and the Army and Navy stores are doing their best to squeeze out those makers who adopt price maintenance. They are now quoting for special patterns of their own, the Civil Service Mower being called the "Express" and the Army and Navy's Mower the "Victoria." The two would appear to be identical, and are evidently made by some firm, provincial or American, at the request of the co-operative stores in question.

### Sheffield Exports to America.

The returns of export trade done by Sheffield with the United States during the quarter just ended is unpleasant reading to those Sheffield manufacturers who in years past have done a good business with the Americans. Quarter after quarter the total goods exported have shown a falling off, but the figures for the three months ended March 31 are more discouraging than ever. The sum of £112,439 represents the whole of the goods sent to the States, a falling off of nearly £27,000, as compared with the preceding quarter, and of double that amount as compared with the corresponding quarter of last year.

### Canada and British Manufactures.

It is important that American manufacturers should watch the strong movements that are being made by Canadian agents to push trade between Canada and Great Britain. From time to time various Canadian agents of one or other organization come to this country and address British manufacturers, urging the importance of closer commercial relations. The latest of these is H. B. Ames of the Montreal Board of Trade, who this week addressed the London Chamber of Commerce. Some of the main points are worth the attention of American readers. He said that the spirit of Canadian loyalty did not alone find expression in singing the national anthem; it had been shown in the preference granted to British imports. Before this preference was given our trade with Canada was declining, and was threatened, in fact, with almost complete annihilation. In 1872 58 per cent. of Canadian imports came from Great Britain, in 1882 the amount had declined to 45 per cent., in 1892 to 35 per cent., and in 1902 it barely reached 25 per cent. In the last three years our trade with Canada had largely increased in volume, but it had not more than held its own in proportion to the growth of the total imports. He did not think that British manufacturers were justified in taking the volume figures and saying that, because these had increased, our trade with the Dominion was in a satisfactory position. Other things being equal, leading Canadian importers would rather buy and sell British goods than those of other nations. They would also find that, in a general way, they had an advantage in respect of price in the Canadian market, owing to the preference accorded to British imports in the matter of duties. It would be impossible for Canada to grant us any additional preferences. Our chief commercial rivals in Canada were the United States and Germany. The latter had been placed, practically, *hors de combat* by the surtax which German goods now had to pay. The effect would probably be to reduce German imports by one-half or one-third of their former amount. The Americans were enterprising business men, and it was well that the British manufacturers should know what were the advantages offered by their most formidable competitors in Canada. In the first place, the manufacturers in the United States usually made their goods in advance of selling them, and so were prepared to execute orders at the shortest possible notice. That was too seldom the case in this country. Considerable delay often occurred in the dispatch of goods from Great Britain, owing to their having to be manufactured after receipt of the order. In the next place, the American quoted his goods delivered in Montreal and in the currency of the country. Consequently, a Montreal importer could tell just what they would cost laid down in his warehouse. On the other hand, when buying in Great Britain he had to do so at their cost in the warehouse here, and add on to that an infinite number of small charges. Again, the American methods of securing business showed far greater activity than ours. The Americans took a greater share of the expense than did English manufacturers in pushing the sale of new articles, and they also recognized that Canadians had trading idiosyncrasies and tried to meet them. If we could see our way to give preferential treatment to Canadian food stuffs the Northwest Territory would soon be filled up, and the growth of the population of the Dominion should be of the greatest benefit to British commerce. Though Canada could not give British goods greater preferences than at present, she could raise higher her tariff wall against foreigners, and that was what would probably

be done when we were prepared to give her preferential treatment.

## AUSTRALIAN NOTES.

FROM A SPECIAL CORRESPONDENT.

MELBOURNE, April 2, 1904.

THE month of March has been merely normal in Hardware circles. Prices in some of the heavier lines show an upward tendency on account of increasing freights.

ANNUAL HARDWARE PICNIC.—Yet, at least in the eyes of the "Hardware assistants," the month has had its compensating advantages, for it is the month of the year when the social element predominates. The Hardware houses close up religiously on the first Saturday in March and on that day some 1500 Hardwaremen, with wives and and families, met for the annual Hardware picnic. The crowd journeyed down to Sorrento, some 30 miles by steamer, situated on the ocean beach, and there gave themselves up to sport and jollification. Handsome trophies are cheerfully given each year by the heads of the various wholesale and retail firms and the agents of British and American Hardware exporters. The day is given over to geniality and good fellowship, and this year, as in former years, produced the dual beneficial result of extra good feeling throughout every branch of the trade and of a substantial financial addition to the funds of the Assistants' Association. As a business speculation the picnic generally produces a net profit of £60 or £80. A musical evening, for the distribution of the prizes won at the picnic, was arranged for March 25, when, before an audience of 1200 (almost exclusively a Hardware gathering), the trophies were presented to the winners.

THE MASTER PLUMBERS OF AUSTRALASIA, or, as they prefer to be called, the National Association of Master Plumbers of Australia, hold their fifth annual convention in Melbourne a few days hence. Papers dealing with the various necessities of the trade in Australia are to be read, and the visiting members are to be entertained socially by the plumbers of the city.

TYE & Co. of this city, an enterprising firm engaged in the furnishing and Hardware trade, are pushing a novel advertising scheme. This firm, consisting of two shrewd Canadian brothers, with more than a tinge of American 'cuteness, have built a fine suburban villa, valued at £850. For every £5 worth of goods sold by them they issue a one-share certificate in the house property. The issue of shares in confined to the current year. The shareholders will be called together in January, 1905, to decide what is to be done with the property. The title is clear, and the whole scheme open as daylight.

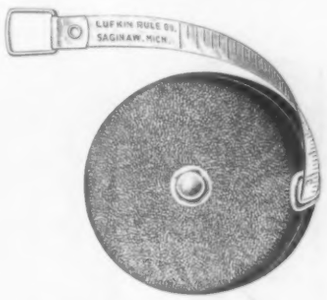
## ARMSTRONG, WALLS & CO.'S REMOVAL.

ARMSTRONG, WALLS & CO., formerly at 45 Centre street, New York, dealers in Machine Shop, Mill and Factory Supplies, have been compelled by the marked increase of their business to obtain much larger quarters. They are now established at 82-84 Centre street, where they have the street floor and all below. The store is admirably lighted, naturally, both front and rear, and they now have abundant facilities and room for promptly executing orders. This concern was formed about three years ago, the partners having been previously identified with various well-known supply houses. Their specialty is the cultivation of trade in the lines referred to of which they carry full stocks. They represent a number of makers of goods, and now with adequate room are in a position to take on a few additional lines in their field.

T. McCleland Hardware Company, Jackson, Miss., have been incorporated with a capital stock of $100,000, and will conduct the wholesale and retail business in Shelf and Heavy Hardware, Agricultural Implements, Sporting Goods, &c. They are successors to T. McCleland & Son, and intend to put several traveling men on the road and materially increase the wholesale part of the business.

### Pocket Tapes in Leather Cases.

The Lufkin Rule Company, Saginaw, Mich., and 280 Broadway, New York, have recently put on the market a bit of elegance in the form of a pocket steel tape, 60 inches long and ¼ inch wide. The cases are of metal covered with fine kid in assorted colors, among which is maroon, electric blue and olive green, the metallic trimmings being silver plated. They have a spring wind with center stop, and each tape is put up in an embossed dou-




*Pocket Tape in Leather Case.*

ble jeweler's box lined with jeweler's cotton. No. 125 is marked in inches and sixteenths. No. 125M is 1½ m. long, graduated in inches and sixteenths on one side and millimeters on the other. No. 125D is graduated in inches and sixteenths on one side, and feet, tenths and hundredths of feet on the reverse side. The same cases can be had containing ¼ x 60 inch enameled linen tapes for those who do not care for the steel tape and at about two-thirds the price, No. 195 being marked in inches and eighths and No. 195M 1½ m., inches and eighths on one side and millimeters on the other.

### Emery Bricks.

The Sterling Emery Wheel Mfg. Company, Tiffin, Ohio, represented by L. Best, 45 Vesey street, New York, have put on the market a series of emery bricks in various sizes and of many different combinations of emery from coarse to fine, there being a different grade on each side. The bricks are regularly made in 8 x 3 x 1 and 4

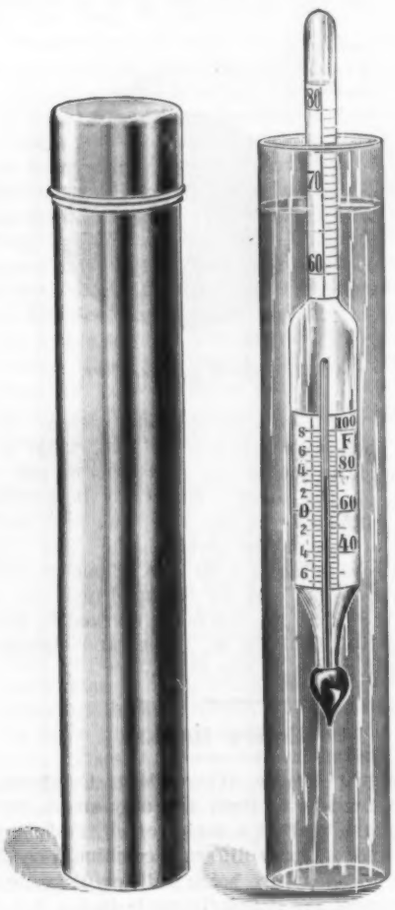
*Emery Rubbing Brick or Whetstone.*

x 3 x 1 inches, suitable in size for rubbing down many kinds of material, being especially suitable for lithographers and marble workers. If they become clogged they can be readily cleaned with kerosene. The company also make a similar article of one grade of emery for sharpening scythes in a suitable shape for such use.

### Taylor's Improved Gasoline Hydrometer.

Taylor Bros. Company, Rochester, N. Y., and 85 Chambers street, New York, have just put on the market Taylor's improved gasoline hydrometer, as here illustrated. The nickeled brass case is 1 x 6 inches, inside of which is a glass test tube, and inside the latter the hydrometer in a soft red flannel case, so that when not in use it can be carried freely in kit of tools by autoist or motor cyclist. The feature of this form of hydrometer is that in the stem is a thermometer having a correction scale, so that the true gravity of the gasoline can be obtained no matter what the temperature at time of test. Usually hydro-

meters for gasoline are made assuming that the gasoline will always be tested at a temperature of 60 degrees F., on which the Baume scale, the accepted standard, is based. But in the ordinary temperature fluctuations and climatic changes it often has to be tested in a temperature as low as freezing or less, and again as high as 90 or 100 degrees, which greatly alters the gravity reading. With this instrument the temperature is seen at a glance, and

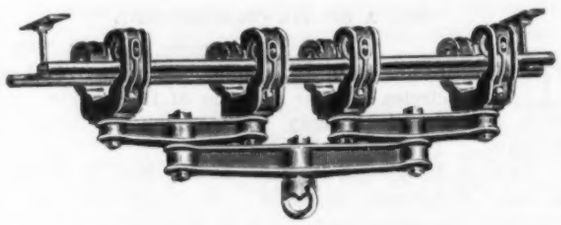



*Taylor's Gasoline Hydrometer, with Test Tube and Correction Scale.*

on the same scale a correction table is laid off, showing the number of degrees to add to or subtract from the hydrometer reading at top at the various temperatures above or below 60 degrees F. For example, if the gasoline at test is 80 degrees F., four is subtracted from the reading, and if the temperature be 40 degrees F. four is added, all of which is plainly printed on scale inside the larger tube, although not shown in the engraving. Gasoline of the proper specific gravity gives very much better results than if above or below standard, and this device acts as a check on unscrupulous dealers.

## Reliable Tandem Merchandise Carrier

Allith Mfg. Company, Chicago, Ill., are marketing the Reliable tandem merchandise carrier shown herewith. The tandem carriers are of the same general construction as their regular carriers, but have eight roller bearing wheels instead of four. This construction is referred to as distributing the load over more track, and permitting the easy handling of heavy loads. The tandem carriers will, it is stated, pass around curves as readily as their Nos. 10 and 20 carriers, as all the connecting bars are fitted with two swivels. The tandem carrier is

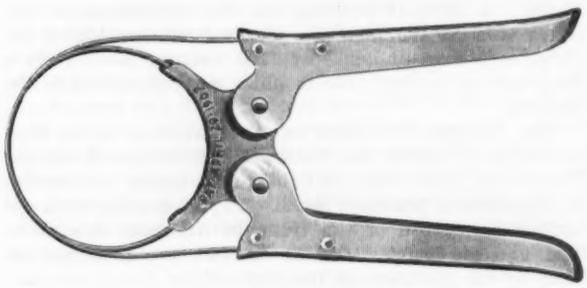


*Reliable Tandem Merchandise Carrier.*

made in No 100, to carry 2000 pounds, and No. 200, to carry 5000 pounds.

## Agrippa Fruit Jar Wrench.

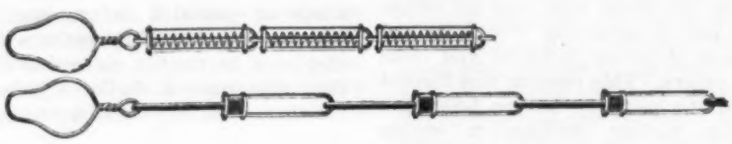
Whitaker Mfg. Company, Chicago, Ill., are offering the fruit jar wrench shown in the accompanying cut. It is made of the best material throughout, it is remarked, handles being of soft spring steel; anchor of double hard steel, with the grip of best quality crucible steel wire. The wrench is designed to unscrew fruit jar caps from jars without injury to the cap or rubber ring; also to screw caps on jars to make them air tight. It may also be used for holding and steadying the jar while filling. The point is made that a large number of fruit jar caps and rubbers are made worthless every year by running a knife around the lower edge of the cap, bending the edge of the cap so that it cannot be used the following season without allowing air to penetrate the jar and spoil the fruit. It is also pointed out that the saving of a half dozen caps or one jar of fruit will pay for a wrench.



*Agrippa Fruit Jar Wrench.*

## Expansion Key Chain.

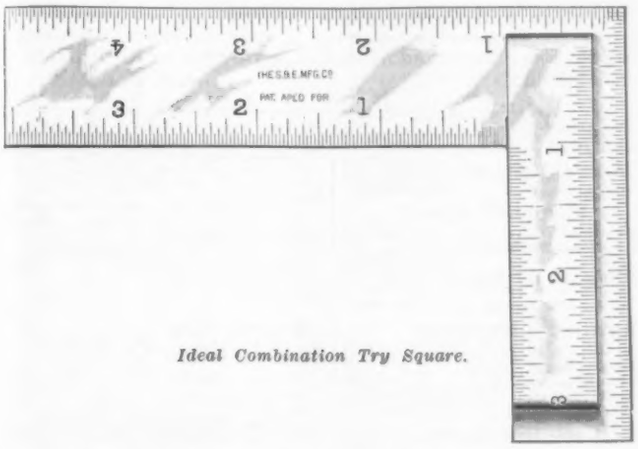
The accompanying cuts represent a key chain expanded and closed, as manufactured by E. C. Gipe, 1289 W. Ravenswood Park, Chicago, Ill. The loop at the upper end of the chain is designed to be fastened on the front suspender button of the wearer's trousers. The chain when closed is 14 inches long and permits the keys being carried in the hip pocket with no slack of chain. When using the keys the chain can be lengthened to 23 inches by holding the keys in the hand and extending the arm. When lengthening the chain each link slides down the bar, the coil springs being compressed where the link and bar join in each alternate section. The chain is made of solid German silver, and the springs are guaranteed not to weaken or break with use.



*Expansion Key Chain.*

## Ideal Combination Try Square.

The combination try square shown herewith is graduated to thirty-seconds of an inch on all edges of both sides; therefore, the carpenter, mechanic or pattern maker is enabled to take measurements in any position the square is placed, permitting him to secure bevel cuts, a feature, it is remarked, which is peculiar to this square. It is light in construction, made of a special tempered steel to resist rough and severe usage, yet retaining its trueness and shape. The square is made with 4 and 6 inch blades, the length of the blade being meas-



*Ideal Combination Try Square.*

ured from the inner edges of the beam to the end of the blade. The width of the blades of both sizes of squares is 1 3-16 inches. The square is designed to meet the requirements of those who wish a popular priced, accurate tool, and is placed on the market by the Smith & Egge Mfg. Company, Bridgeport, Conn.

## Gem Folding Miter Box.

J. C. McCarty & Co., 10 Warren street, New York, are marketing the Gem folding miter box, here shown. An important feature of this device is the compact form in which it can be carried in a tool kit, Fig. 1 illustrating it collapsed and Fig. 2 representing it ready for use. Closed, its extreme outer dimensions are 14 x 3½ x 2¼ inches. The wood portion, of varnished yellow birch, is ¾ inch thick, the bottom leaves being hinged with 2-inch brass butts, each wing being 2⅜ inches wide. At the top there are accurate adjustable nickeled iron guides, set to cut 45-degree angles both ways, on both sides; right an-

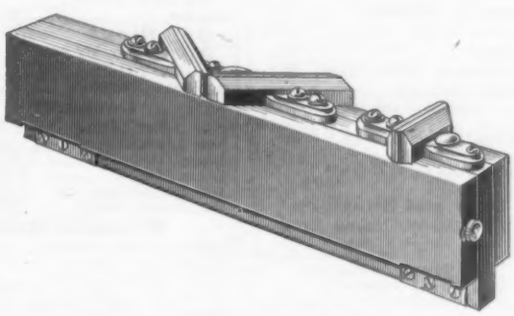


*Fig. 1.—Gem Folding Miter Box, Closed.*

gles as well, with copper contact points on each side to prevent cutting the bottom sections. One of each of the guides is adjustable to any size or style of hand or back saw, the fixed portions being held rigidly in position with stout round head screws that pass entirely through the center piece, with nuts on the other end, the movable guides being held by two screws in each, after adjustment at the proper width to make a close miter. When opened out a steel rod 3-16 x 6 inches, on the end of which is a 9-16-inch brass button, is withdrawn from its place in the end of one of the bottom wings, Fig. 1, and thrust at right angles through both wings and center, Fig. 2, to keep each of the three parts in alignment. All metal parts are nickeled and each miter box is put up in a dovetailed slide cover wood box of ¼-inch stuff, 12 in a case. While designed for cutting wood miters in moldings, &c., up to 2½ inches by all mechanics, this box is especially commended by the makers to carpenters, paper

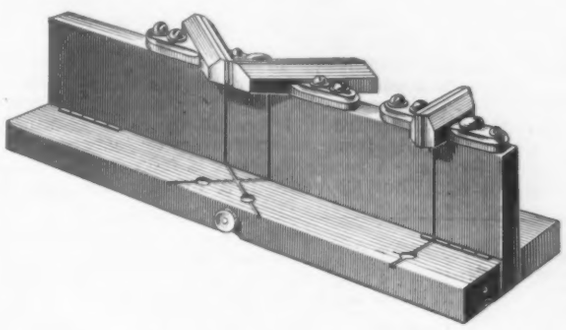


*Fig. 2.—Miter Box Open, Ready for Use.*

hangers, picture frame makers and cabinet makers. Two pieces of molding can be sawn on opposite sides at the same time and a true miter obtained.

## Combination Bracket and Portable Lamp.

The Goodwin & Kintz Company, Winsted, Conn., have begun the manufacture of a new combination bracket and portable lamp for use with incandescent electric lights, as shown in the accompanying illustration. On the bottom of the base is a row of two-sized slots extending

*Combination Bracket and Portable Lamp.*

throughout its circumference. The shape of the slot permits it to slip over the head of a flat wood screw and then engage it, thus forming a complete bracket fixture. The socket for the electric lamp swings on trunnions supported by the two arms, and is weighted to insure that the lamp be always in an upright position, whether in use as a bracket or as a portable lamp standing upon the base. The device is made in an extensive variety of finishes.

The style of the Mangold-Moore Implement, Hardware & Harness Company, Anna, Ill., has been changed to Mangold-Alden Company.

# Current Hardware Prices.

## REVISED MAY 10, 1904

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Abrasives—

Adamite in Carloads:
Crystal ₩ ton $90@100
Grain ₩ ton $120@140
See also *Emery*.

### Adjusters, Blind—

Domestic, ₩ doz. $3.00 33⅓%
North's 10%
Zimmerman's—See *Fasteners, Blind.*

### Window Stop—

Ives' Patent 35%
Taplin's Perfection 35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anvils—American—

Armand Hammer, Wrought ₩ lb 8½@8¾¢
Steel Patent Trenton ₩ lb 9½@9¾¢
Eagle Anvils ₩ lb 7¾@7¾¢
Hay-Budden, Wrought 9@9¼¢
Horseshoe brand, Wrought 9@9¼¢

### Imported—

Peter Wright & Sons ₩ lb 10½¢

### Anvil, Vise and Drill—

Millers Falls Co., $18.00 15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—

Hull Bros. & Co. 30&5%
Livingston Nail Co. 33⅓%

### Augers and Bits—

*Com. Double Spur* 75@75&5%
*Boring Machine Augers* 66⅔@70%
*Car Bits, 12-in. twist* 60@60&10%
*Jennings' Pattern* 50&10&5@60%
Ford's Auger and Car Bits 40&5%
Forstner Pat. Auger Bits 25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list 25&10%
No. 30. R. Jennings' List. 40&7½&10%
Russell Jennings' 25&10&2½%
L'Hommedieu Car Bits 15&10%
Mayhew's Countersink Bits 45%
Millers' Falls 50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits 40&10%
Pugh's Black 20%
Pugh's Jennings' Pattern 35%
Snell's Auger Bits 60%
Snell's Bell Hangers' Bits 50&10%
Snell's Car Bits, 12-in. twist 60%
Wright's Jennings Bits (R. Jennings' list) 50%

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's small, $18; large, $26 50&10%
Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18 50&10%
Ford's, Clark's Pattern 50&10@60%
C. E. Jennings & Co., Steer's Pat. 25&10%
Swan's 60%

### Gimlet Bits—

*Common Double Cut..gro. $3.00@3.25*
*German Pattern.....gro. $4.50@4.75*

### Hollow Augers—

*Bonney Pattern, per doz. $10.00@11.00*
Ames 25&10%
New Patent 25&10%
Universal 20%
Wood's Universal 25%

### Ship Augers and Bits—

Ford's 40%
C. E. Jennings & Co.:
L'Hommedieu's 15&10%
Watrous' 33⅓&10%
Ohio Tool Co.'s 40%
Saed's 40%

### Awl Hafts, See *Hafts, Awl.*

### Awls—

*Brad Awls:*
*Handled.....gro. $2.75@3.00*
*Unhandled, Shouldered.gro.65@66c*
*Unhandled, Patent.....gro. 66@70c*
*Peg Awls:*
*Unhandled, Patent....gro. 31@34c*
*Unhandled, Shouldered.gro.65@70c*
*Scratch Awls:*
*Handled, Common..gro. $3.50@4.00*
*Handled, Socket..gro. $11.50@12.00*
Hurwood 40%

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*First Quality* $5.50@6.00
*Second Quality* $4.75@5.25

### Axle Grease—See *Grease, Axle*

### Axles—

*Iron or Steel*
*Concord, Loose Collar* 5@5½¢
*Concord, Solid Collar* 5@5½¢
*No. 1 Common* 4@4½¢
*No. 1½ Com. New Style* 4½@5¢
*No. 2 Solid Collar* 4¾@5¼¢
*Nos. 7, 8, 11 and 12* 60&5@60&10%
*Nos. 13 to 14* 60@5@60&10%
*Nos. 15 to 18* 60&10@70%
*Nos. 19 to 22* 60&10@70%

### Boxes, Axle—

*Common and Concord, not turned..* lb. 4¼@4½¢
*Common and Concord, turned..* lb. 5@5½¢
*Half Patent* lb. 9@9½¢

### Bait—Fishing—

Headryx:
A Bait 30%
B Bait 25%
Competitor Bait 20&5%

### Balances—Sash—

Caldwell new list 50%
Pullman's 60%

### Spring—

*Spring Balances* 60@60&5%
Chatillon's:
Light Spg. Balances. 40&10%
Straight Balances. 40%
Circular Balances 50%
Large Dial. 30%
Pelouze 50%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—

*Steel Crowbars, 10 to 40 lb., per lb.* 3@3½¢

### Towel—

No. 10 Ideal, Nickel Plate ₩ gro, $8.50

### Beams, Scale—

*Scale Beams, List Jan. 19, '82* 40&10%
Chattillon's No. 1 30%
Chattillon's No. 2 40%

### Beaters—Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₩ doz $0.85; Tinned $1.00
No. 11 Wire Coppered ₩ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized ₩ doz. $1.75
Western W. G. Co.
No. 1 Electric ₩ gro. $7.80
No. 2 Buffalo ₩ gro. $9.00
No. 3 Perfection Dust ₩ gro. $8.00

### Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned ₩ doz. $1.20
Holt, No. 1, Tinned ₩ doz. $1.50
Holt, No. B, Japanned ₩ doz. $2.00
Holt, No. 2, Tinned ₩ doz. $2.25
Lyon, No. 2, Japanned ₩ doz. $1.25
Lyon, No. 3, Japanned ₩ doz. $1.50
Lightning Chain, ₩ gro $15.00
National Mfg. Co.: ₩ gro.
No. 1 Dover, Family size $7.00
No. 2 Dover, Hotel size 14.00
Taplin Mfg. Co.: ₩ gro.
No. 60 Improved Dover $6.00
No. 75 Improved Dover $6.50
No. 100 Improved Dover $7.00
No. 102 Improved Dover, Tin'd $8.50
No. 150 Improved Dover, Hotel $15.00
No. 152 Imp'd Dover, Hotel, T'd $17.00
No. 200 Imp'd Dover Tumbler $8.50
No. 202 Imp'd Dover Tumbler, Tin'd $9.50
No. 300, Imp'd Dover Mammoth, ₩ doz $25.00
Western, W. G. Co., Buffalo $7.00
Wonder (S. S. & Co.).. ₩ gro. net, $6.00

### Bellows—

*Blacksmith, Standard List..75@75&5%*

### Blacksmiths'—

| *Inch..* | *30* | *32* | *34* | *36* | *38* | *40* |
|---|---|---|---|---|---|---|
| *Each* | *$3.50* | *3.75* | *4.25* | *4.80* | *5.35* | *6.15* |

*Extra Length:*
*Each..$4.00 4.55 5.10 5.60 6.40 7.50*

### Molders—

| *Inch.....* | *10* | *12* | *14* |
|---|---|---|---|
| *Doz.....* | *$8.50* | *10.00* | *13.00* |

### Hand—

| *Inch.....* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz.....* | *$4.25* | *4.50* | *5.00* | *6.50* | *7.75* |

*Net Prices.*

### Bells—Cow—

*Ordinary goods* 75&5@75&10%
*High grade* 70&10@70&10&5%
Jersey 75&10%
Texas Star 50%

### Door—

Abbe's Gong 45%
Barton Gong 55%
Home, R. & E. Mfg. Co.'s 55&10%
Lever and Pull, Sargent's 60&10&10%
Yankee Gong 35%

### Hand—

*Hand Bells, Polished, Brass* 60& @60&10%
*White Metal* 60%
*Nickel Plated* 50@50&5%
*Swiss* 60@60&7½%
Cone's Globe Hand Bells 33⅓&33⅓&10%
Silver Chime 33⅓@33⅓&10%

### Miscellaneous—

*Farm Bells* lb. 2¼@2½
*Steel Alloy Church and School* 50&10@60&5%
AmericanTube & Stamp'g Co. Gongs 75%
Table Call Bells 50&5%&10%
Trip Gong Bells 55&10@60%

### Belting—Rubber—

*Agricultural (Low Grade)..75@75&5%*
*Common Standard* 70@70&10%
*Standard* 65@70%
*Extra* 60&5@60&10%
*High Grade* 50&5@50&10%
Boston Belting Co.:
Seamless Stitched Imperial 45&5%
Boston 50&5%
Niagara 60&5%

### Leather—

*Extra Heavy, Short Lap....60@60&5%*
*Regular Short Lap 60&10@60&10&10%*
*Standard* 70@70&5%
*Light Standard* 70&10%
*Cut Leather Lacing* 60&10%
*Leather Lacing Sides, per sq. ft..* 15c

### Bench Stops—See *Stops, Bench*

### Benders and Upsetters, Tire—

Detroit Perfected Tire Bender 40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.5; No. 5, $20.50.

### Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks—Tackle—

*Common Wooden* 70&10@75&5%
Hollow Steel Blocks, with Ford's Patent Sheaves 50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron 50&10%
Stowell's Self Loading 60%
See also *Machines, Hoisting.*

### Boards, Stove—

*Zinc, Crystal, &c.....30&10@40&5%*

### Bolts—Carriage, Machine, &c.—

*Common Carriage* 75@....%
*Phila. Eagle, $3.00 list May 24, '99....* 80@80&10%
*Bolt Ends, list Feb. 14, '95* 75@....%
*Machine* 75@75&5%
*Machine with C. & T. Nuts* 70&5@....%

### Door and Shutter—

*Cast Iron Barrel, Round Brass Knob:*

| *Inch.....* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz...* | *$0.26* | *.30* | *.39* | *.47* | *.65* |

*Cast Iron Spring Foot:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.25* | *1.75* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *1.05* | *1.30* |

*Cast Iron Shutter, Brass Knobs:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.57* | *.80* | *1.00* |

*Wrt Barrel, Jap'd..75&10@75&10@10%*
*Wrought " Bronzed..50&5@50&10%*
*Wrought Flush, B. K..50&10@60&10%*
*Wrought Shutter...40&10&10@60&5%*
*Wrought Square Neck.....50@50&10%*
*Wrought Sunk, Flush.....50@50&10%*
Ives' Patent Door 60%

### Stove and Plow—

*Plow* 65&10@....%
*Stove* 30&5@30&10&5%

### Tire—

Common 72½@72½&10%
*Norway Iron* 80@80&10%
American Screw Company:
Norway Phila., list Oct. 16, '84 80%
Eagle Phila. list Oct. 16, '84 82½%
Bay State, list Dec. 28, '99 72½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84 80%
Eagle Phila., list Oct. 16, '84 83⅓%
Eclipse, list Dec. 28, '99 72½%
Russell, Burdsall & Ward Bolt & Nut Co.
Empire, list Dec. 28, '99 72½%
Norway Phila., list Oct. '84 80%
Upson Nut Co.:
Tire Bolts 72½%

### Borers, Tap—

*Borers Tap, Ring, with Handle:*

| *Inch.....* | *1¼* | *1⅜* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz..* | *$4.30* | *5.00* | *5.75* | *7.25* |
| *Inch.....* | | | *2¼* | *2½* |
| *Per Doz.....* | | | *$8.65* | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each 25%

### Boxes, Mitre—

C. E. Jennings & Co. 25&10%
Langdon 15&10%
Perfection ₩ doz. $6.00
Schatz 40%

### Braces—

NOTE.—*Most Braces are sold at net prices.*
*Common Ball, American..$1.15@1.25*
Barber's 50&10&10@60&10%
Fray's Genuine Spofford's 60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 60%
C. E. Jennings & Co. 50&5&10%
Mayhew's Ratchet 60%
Mayhew's Quick Action Hay Patent 50%
Millers Falls Drill Braces 25&10%
P., S. & W. Co. Peck's Patent 60&10@65%

### Brackets—

*Wrought Steel* 80@....%
Bradley's Wire Shelf:
Full cases 80&10&10%
Broken cases 80&10%
Griffin's Pressed Steel 80%
Griffin's Folding Brackets 70&10%
Stowell's Cast Shelf 75%
Stowell's Sink 50%
Western, W. G. Co., Wire 60&10%

### Bright Wire Goods—See *Wire and Wire Goods.*

### Broilers—

Western, W. G. Co 80%
Wire Goods Co. 75@75&10%

### Buckets, Well and Fire—

See *Pails*

### Bucks, Saw—

Hoosier ₩ gro. $36.00

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—

*Wrought list Sept., '96.....20@30%*
Cast Brass, Tiebout's 50%

### Cast Iron—

*Fast Joint, Broad* 50@50&10%
*Fast Joint, Narrow.....50@50&10%*
*Loose Joint* 70&5@70&10%
*Loose Pin* 70&5@70&10%
*Mayer's Hinges* 70&5@70&10%
*Parliament Butts* 70&5@70&10%

### Wrought Steel—

*Table and Back Flaps* 75%
*Narrow and Broad* 75%
*Inside Blind* 75&10%
*Loose Pin* 75%
*Loose Pin, Ball and Steeple Tip* 80&20%
*Japanned, Ball Tip Butts* 70&10%
*Bronzed Wrt. Nar. and Inside Blind Butts* 55&10%

*Extra 10@10&10%*

### Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series 5%
1200 series 33⅓%
200, 300, 600 and 900 series 40&10%
Hendryx Bronze:
700, 800 series 40&10%
Hendryx Enameled 40&10%

### Calipers—See *Compasses.*

### Calks, Toe and Heel—

*Blunt, 1 prong* per lb. 4@4½¢
*Sharp, 1 prong* per lb. 4½@4¾¢
Perkins' Blunt Toe cents, ₩ lb .365
Perkins' Sharp Toe cents, ₩ lb .415

## Can Openers—See *Openers, Can*

## Cans, Milk—

| | 5 | 8 | 10 gal. | |
|---|---|---|---|---|
| Illinois Pattern. | $1 50 | 2.00 | 2.25 | each. |
| Iowa Pattern... | .... | 2.35 | 2.50 | each. |
| | 20 | 30 | 40 | qts. |
| New York Patt'rn | 1.65 | 2.40 | 2.75 | each. |
| Baltimore Patt'rn | .... | 1.80 | 2.00 | each. |

## Cans, Oil—

Buffalo Family Oil Cans:

| 3 | 5 | 10 gal. | |
|---|---|---|---|
| $48.00 | 64.20 | 129.60 | gro., net |

## Caps—Percussion—

*Eley's E. B.*.....60c
*G. D*.....*per M* 34@35c
*F. L*.....*per M* 40@45c
*G. E*.....*per M* 50@55c
*Musket*.....*per M* 62@63c

## Primers—

*Berdan Primers, $2.00 per M*...20c@25
*B. L Caps (Startevant Shells) $2.00 per M*.....20%
*All other primers per M.$1.52@$1.60*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50*.....10c&5%
*38 C. F., $7.00*.....10c&5%
*22 cal. Rim, $1.50*.....10c&5%
*32 cal. Rim, $2.75*.....10&5%
B. B. Caps, Con. Ball Swgd.....$1.90
B. B Caps, Round Ball.....$1.40
*Central Fire*.....25%
*Target and Sporting Rifle*.....15c&5%
*Primed Shells and Bullets*.....15c&10%
*Rim Fire Sporting*.....50%
*Rim Fire, Military*.....15c&5%

## Cases, Show—

Sun, No. 102. Silent Salesman, 6 ft., $25.00

## Casters—

*Bed*.....70@70c&10%
*Plate*.....60c&5@60c&10%
*Philadelphia*.....75@75c&5%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....75&5%
Martin's Patent (Phœnix).....45%
Smith & Hemenway Co.....33⅓%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....45%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Coil—

*American Coil, Jobbers' Shipments:*

| | | | | | |
|---|---|---|---|---|---|
| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 |
| 8.00 | 5.30 | 4.15 | 3.75 | 3.60 | 3.50 | 3.45 |
| ⅝ | ¾ | ⅞ | 1 to 1¼ inch. | | | |
| 3.30 | 3.25 | 3.50 | 3.15 | per 100 lb. | | |

*German Coil*.....60c&10c&10%

## Halters and Ties—

*Halter Chains*.....60c&10@60c&10c&10%
*German Pattern Halter Chains, list July 24, '97*.....60c&10c&10@...%
*Cow Ties*.....60@60c&10%

## Trace, Wagon, &c.—

*Traces, Western Standard: 100 pair*
*6½—6-3, Straight, with ring*...$23.50
*6½—6-2, Straight, with ring*..$24.50
*6½—8-2, Straight, with ring*..$28.00
*6½—10-2. Straight, with ring*..$32.00
*Add 2¢ per pair for Hooks.*
*Twist Traces 2¢ per pair higher than Straight Link.*
*Trace, Wagon and Fancy Chains*..60c&5@60c&10c&5%

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron*.....60c&10@60c&10c&5%
*Brass*.....60c&10@60c&10c&10%
*Safety Chain*.....75@75c&10c&5%
*Gal. Pump Chain*.....*lb* 4¼@4¼c
Covert Mfg. Co.
Breast.....40&2%
Halter.....40&2%
Heel.....40&2%
Rein.....40&2%
Stallion.....40&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter.....45@50&5%
Niagara Coil and Halter.....45@50&5%
Niagara Cow Ties.....45&5@50&10&5%
Niagara Wire Dog Chains...45@50&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl-Jointed Chain.....50%

## Chalk—(From Jobbers.)

*Carpenters' Blue*.....gro. 40c
*Carpenters', Red*.....gro. 35c
*Carpenters', White*.....gro. 30c
*See also Crayons.*

## Checks, Door—

Bardsley's.....45%
Columbia.....50&10%
Eclipse.....60&10%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc., Chests, with Tools.....30%
Machinists' and Fine Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Ches s.....33⅓&10%

## Chisels—

### Socket Framing and Firmer

*Standard List*.....70@70c&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Ohio Tool Co.'s.....7%
Swan's.....70%
L. & L. J. White.....30@30&5%

### Tanged—

*Tanged Firmers*.....40c&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181.....16⅔&10%
L. & I. J. White, Tanged.....25&10%

### Cold—

*Cold Chisels, good quality.lb. 13@15c*
*Cold Chisels, fair quality..lb. 11@12c*
*Cold Chisels, ordinary*.....*lb. 9 @10c*

## Chucks—

Beach Pat., each $8.00.....35&5%
Pratt's Positive Drive.....25%
Empire.....25%
Blacksmiths'.....25%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard..30%
Drill Chucks, New Model.....20%
Independent Lathe Chucks.....40%
Improved Planer Chucks.....25%
Universal Lathe Chucks.....40%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron Face Plate Jaws..40%
Independent Steel Face Plate Jaws..40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....45%
Little Giant Double Grip Drill.....45%
Little Giant Drill, Improved.....45%
Oneida Drill.....45%
Scroll Combination Lathe.....45%

## Clamps—

Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co.....50%
Carriage Makers' Sargent's.....60%
Beaty, Parallel.....33⅓&10%
Linemans' Utica Drop Forge & Tool Co40%
Saw Clamps, see *Vises, Saw Filers'.*

## Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....40%

## Sidewalk—

Star Socket, All Steel...₱ doz. $4.05 net
Star Shank, All Steel...₱ doz. $3.24 net
W. & C. Shank, All steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓@33⅓&10%
L. & I. J. White.....30%

## Clippers—

Chicago Flexible Shaft Company
'98 Chicago Horse.....$8.75 } 15%
1902 Chicago Horse.....$10.75 }
20th Century Horse, each, $5.00.....20%
Lightning Belt.....$15.00 } 15%
Chicago Belt.....$20.00 }
Stewart's Patent Sheep.....$18.50 }

## Finger Nail Clippers—

Smith & Hemenway Co.....doz. net $2.00

## Clips, Axle—

*Eagle 5-16 and ⅜ inch*....75@75c&10%
*Norway, 5-16 and ⅜ inch*..60c&10@70%

## Cloth and Netting, Wire

—*See Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.* 70c&10@75%

## Coffee Mills—See *Mills, Coffee.*

## Collars, Dog—

Brass, Walter B. Stevens & Son's list.40%
Embossed, Gilt, Walter B. Stevens & Son's list.....30&10%
Leather, Walter B. Stevens & Son s list40%

## Combs, Curry—

Metal Stamping Co.....20&10%

## Mane and Tail—

Covert's Saddlery Works.....60&10%

## Compasses, Dividers, &c.

*Ordinary Goods*.....75c&5@75c&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%

## Compressors, Corn Shock—

J. B. Hughes' ₱ doz.....$2.50

## Conductor Pipe, Galva —

*L. C. L. to Dealers:*

| *Territory.* | *Nested.* | *Not nested.* |
|---|---|---|
| *A. Eastern.* | 75c&7½% | 75c&2½% |
| *B. Eestern.* | 75c&10&2½% | 75c&7½% |
| *Central.* | 75c&7½% | 75% |
| *Southern* | 70c&10% | 70c&5% |
| *S. Western.* | 70c&7½% | 70c&2½% |

*Terms, 60 days, 2% cash, 10 days. Factory shipments generally delivered.*
See also *Eave Troughs.*

## Coolers, Water—

| Gal. each. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Labrador | $1.20 | $1.50 | $1.80 | $2.10 | 2.70 |
| Gal. | 3 | 4 | 6 | 8 | |
| Iceland, ea. | $1.80 | $2.10 | 2.40 | $3.00 | |
| Gal. | 2 | 3 | 4 | 6 | 8 |
| Galv. Lined Ea. | $1.85 | $2.00 | $2.2 | $2.90 | $3.90 |

25%

| Ga.v. Lined side handles Gal. | 2 | 3 | 4 | 6 | 3 |
|---|---|---|---|---|---|
| Each. | $1.95 | $2.15 | $2.40 | $3.30 | $4.15..25% |

## Coopers' Tools—

See *Tools, Coopers'.*

## Cord—Sash—

*Braided, Drab*.....*lb. 35c*
*Braided, White, Com*.....*lb. 23@25c*
*Cable Laid Italian*..*lb. A, 18c; B, 16c*
*Common India*.....*lb. 10@10½c*
*Cotton Sash Cord, Twisted*....20@25c
*Patent Russia*.....*lb.* ..@14c
*Cable Laid Russia*.....*lb.* ..@15c
*India Hemp, Braided*.....*lb* ..@18c
*India Hemp, Twisted*.....*lb.* 12@13c
*Patent India, Twisted*.....*lb.*12@13c
Anniston Cordage Co.: Braided Cotton.
Old Glory, Nos. 7 to 12.....₱ lb 30 ¢
Anniston, Nos. 7 to 12.....₱ lb 25 ¢
Old Colony, Nos. 7 to 12.....₱ lb 25 ¢
Anniston Drab, Nos. 7 to 12...₱ lb 30 ¢
Pearl Braided, cotton, No. 6 ₱ lb., 24¢; Nos. 7 to 12 23¢.
Eddystone Braided Cotton .No. 6 ₱ lb 27¢
Harmony Cable Laid Italian. No. 7 to 10.....₱ lb 23¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton.....₱ lb 36½¢
Braided, Italian Hemp.....₱ lb 36¢
Braided, Linen.....₱ lb 53¢
Braided, White Cotton or Spot.₱ lb 33¢
Massachusetts, White.....₱ lb 28 ¢
Massachusetts, Drab.....₱ lb 32 ¢
Phœnix, White, No's 7 to 13.....24¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab.....40¢
A quality, White.....35¢
B quality, Drab.....35¢
B quality, White.....30¢
Italian Hemp.....40¢
Linen.....57½¢

## Wire, Picture—

*List Oct., '00*.....85c&10@85c&10c&10c&5%

## Cradles—

*Grain*.....40c&12½%

## Crayons—

*White Round Crayons, gross.5⅓@6c*
*Cases, 100 gro., $4.00, at factory.*
D. M. Steward Mfg. Co.
Jumbo Crayons.....gr. $3.50 }
Metal Workers' Crayons.gr. $2.50 }
Soapstone Pencils, round, flat or square.....gr.$1.50 } Case lots 20%
Rolling Mill Crayons.....gr. $2.50 }
Railroad Crayons (composition) gr. $2.00 }
Zelnicker's Lumber:
Red, Blue, Green.....₱ gro. $6.50
Black.....₱ gro. $4.00
See also *Chalk.*

## Crooks, Shepherds'—

Fort Madison, Heavy.....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden.....50%

## Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847..₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50
Simeon L. & Geo. H. Rogers Company: 12 doz. Medium Knives.....₱ doz. $3.00
No. 77 Medium Knives.....₱ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

## Meat and Food—

American.....30%

| Nos. | 1 | 2 | 3 | 4 | B | 5 |
|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $25 | $50 | $60 |

Enterprise.....25@25&7½%

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 |

Dixon's, ₱ doz.....30&10&40%

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal.....$4 &10&50%
Little Giant, ₱ doz.....33⅓&40%

| Nos. | 305 | 310 | 312 | 330 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

N. E Food Chopper.....40%
New Triumph No. 605, ₱ doz. $24.00..30&10&40%
Russwin Food No. 1, $24 00; No. 2, $27.00..45&10&10%
Sterling.....40@40&1 %
No 1....$2.00 each No. 2.. $2.50 each
Woodruff's, ₱ doz.....30&10@40%

| Nos. | 100 | 150 |
|---|---|---|
| | $15.00 | $18.00 |

Enterprise Beef Shavers.....25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9..55%
Kraut Cutters 36 x 12, 40 x 12.....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater.....₱ doz. $4.00
Sterling $6.00 each.....33⅓%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₱ gr....$18@$20
Slaw Cutters, 2 Knife, ₱ gr....$22@$36

## Tobacco—

*All Iron, Cheap*.....*doz. $4.25@$4.50*
Enterprise.....25@25%
National, ₱ doz. No. 1, $21; No. 2, $18..40%
Sargent's, ₱ doz., No. 2.....60%
Sargent's No 12 and 21.....60&10%

## Washer—

Appleton's, ₱ doz. $16.00.....50&10&10%
Bonney's.....33⅓%

# Diggers, Post Hole, &c.—

Dalbey Post Hole Auger...per doz.. $9.00
Iwan's Improved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers, ₱ doz.....$6.50
Iwan's Perfection Post Hole Digger.. ₱ doz. $8.50
Iwan's Split Handle Post Hole Diggers, ₱ doz.....$7.50
Kohler's Universal..... ₱ doz. $15.00
Kohler's Little Giant.....₱ doz. $12.60
Kohler's Hercules.....₱ doz. $10.00
Kohler's Invincible.....₱ doz. $9 60
Kohler's Rival.....₱ doz. $8.50
Kohler's Pioneer.....₱ doz. $7.50
Never-Break Post Hole Diggers, ₱ doz. $24.00.....60%
Samson, ₱ doz. $34.00.....25%

## Dividers—See *Compasses.*

## Doors Screen—

Phillips', style E, ⅛ in.....₱ doz, $10.50
Phillips', style 077, ¼ in. .....₱ doz, $8.00
Phillips', style x-y, ¾ in ....₱ doz, $11.00
Porter's Plain, No. 6.....₱ doz. $6 75
Porter's Ornamental, No. 70. ₱ doz. $10.50
Porter's No. 99.....$9.00
Porter's No. 44.....$10.75

## Drawers, Money—

Sun Money Drawers. No. 5, ₱ doz. $9.50; No. 6, with Bell, $10.00; No. 6, with Gong, $10.50.
Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15; No. 3, $12; No. 4, $18

## Drawing Knives—

See *Knives, Drawing.*

## Drills and Drill Stocks—

*Common Blacksmiths' Drill..each $1.50@$1.75*
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3.....16⅔&10%
Johnson's Drill Points.....16⅔&5&10%
Millers Falls Automatic Drills...33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....33⅓%
Ratchet, Whitney's, P. S. & W.....50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

## Twist Drills—

*Bit Stock*.....60c&10@60c&10c&10%
*Taper and Straight Shank*.....60c&10@60c&10c&5%

## Drivers, Screw—

*Screw Driver Bits..per doz. ..45@75c*
Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay's Double Action Ratchet.....25%
Goodell's Auto50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, N s. 20 and 21.....5&10%
Millers Falls, Nos. 11, 12, 41 42.....15&10%
Never Turn.....60%
New England Specialty Co.....50%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s, Perfect Handle...40%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles 70@80&10&10%
No. 86.....70@70&10&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

## Eave Trough, Galvanized

| *Territory.* | *L. C. L.* |
|---|---|
| *A. Eastern*..... | 80c&10% |
| *B. Eastern*..... | 80c&10c&5% |
| *Central*..... | 80c&10% |
| *Southern*..... | 75c&10&5% |
| *S. Western*..... | 75c&10c&5% |

*Terms, 2% for cash. Factory shipments generally delivered.*
See also *Conductor Pipe and Elbows.*

## Elbows and Shoes—

*Factory shipments*.....60%
Perfect Elbows (S. S. & Co.).....30%

## Emery, Turkish—

*4 to 16 5 to 150 Flour*

| *Kegs* | *lb.* | 5c | 5½c | 3½c |
|---|---|---|---|---|
| ½ *Kegs* | *lb.* | 5¾c | 5¾c | 3½c |
| *Kegs* | *lb* | 5c | 6c | |
| *10-lb cans.10 in case* | | 6½c | 7c | 6c |
| *10-lb.cans,less than 10* | | 10c | 10c | 8c |

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice

—See *Squeezers, Lemon.*

## Fasteners, Blind—

Zimmerman's.....50&10%
Walling's.....50%

## Cord and Weight—

Ives.....40%

## Faucets—

*Cork Lined*.....50@50c&10%
*Metallic K. & Leather Lined*.70@70c&10%
*Red Cedar*.....40@40c&10%
*Petroleum*.....70c&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key.....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's No Brand, Cedar.....50%
John Sommer's Perfection Cedar.....40%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¼ and ⅜ inch.....35%
Self Measuring:
Enterprise, ₱ doz. $30.00.....40&10%
Lane's, ₱ doz. $30.00.....40&10%
National Measuring, ₱ doz. $36..40&10%

## Felloe Plates—

See *Plates, Felloe.*

## Files—Domestic—

*List revised Nov. 1, 1899.*

| *Best Brands*..... | 70c&5@70c&10c&5% |
|---|---|
| *Standard Brands.* | 75c&5@75c&10c&10% |
| *Second Quality*..... | 75c&10c&10@80c&5% |

### Imported—

*Stubs' Tapers, Stubs' list, July 24, '97*.....30%

## Fixtures, Grindstone—

*Net Prices:*

| *Inch*.... | 15 | 17 | 19 | 21 | 24 |
|---|---|---|---|---|---|
| *Per doz.* | $2.15 | 2.85 | 3.25 | 3.75 | 4.50 |

P., S. & W. Co.....30&10@10%
Reading Hardware Co.....60%
Sargent's.....60&10&10%
Stowell's Giant Grindstone Hanger, ₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures Light... 60&10%

## Fodder Squeezers—

See *Compressors.*

### Forks—

*Base Discounts Aug. 1, 1893, list:*
*Hay, 2 tine* .50&10&5%
*Boys' & Fish, 2 tine* .50&10&5%
*Hay & Boys', 3 tine* 60&5%
*Hay & Boys', 4 tine* 66⅔%
*Champion Hay* 66⅔%
*Hay & Header, long 3 tine* 65%
*Header, 4 tine* 65%
*Barley, 4 & 5 tine, Steel* 60&25%
*Manure, 4 tine* .60&15&5%
*Manure, 5 and 6 tine* 66⅔&25%
*Spading* 70&25%
*Potato Digger, 6 tine* 60&10%
*Sugar Beet* 40&10%
*Coke & Coal* 40&10%
*Heavy Mill & Street* 65%
Iowa Dig-Ezy Potato 60&10%
Victor, Hay 60&15&25%
Victor, Manure 66⅔%
Victor, Header 65%
Champion, Hay 66⅔%
Champion Header 65%
Champion, Manure 60&15&25%
Columbia, Hay 60&20%
Columbia, Manure 70%
Columbia, Spading 70&12½%
Hawkeye Wood Barley 40%
W. & C. Potato Digger 60&12½%
Acme Hay 60&10&5%
Acme Manure, 4 tine 60&20&7½%
Dakota Header 65&15&5%
Jackson Steel Barley 65&15&5%
Kansas Header 66⅔%
W. & C. Favorite Wood Barley 40%
Plated.—See *Spoons.*

### Fountains, Stock—

Double Dewey ₱ doz. $13.00

### Frames— Saw—

*White, Straight Bar, per doz.* 75@80c
*Red, Straight Bar, per doz* $1.00&$1.25
*Red, Double Brace, per doz.* $1.40@1.50

### Freezers Ice Cream—

| *Qt.* | 1 | 2 | 3 | 4 | 6 |
|---|---|---|---|---|---|
| *Each* | $1 25 | $1.60 | $1.90 | $2.20 | $2 80 |

### Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*

*Hemp* $2.75
*Cotton* 3.20
*Waterproof Single Taped* 3.65
*Waterproof Double Taped* 4.40
*Waterproof Triple Taped* 5.15
*10c&25%*

## Gates, Molasses and Oil—

*Stebbins' Pattern* 30c&10@30c&10c&5%

### Gauges—

*Marking, Mortise, &c.* 50c&10c&5@50c&10c&10c&5%
Chapin-Stephens Co.:
Marking, Mortise, etc. 50&10@50&10&10%
Scholl's Patent 50&10@50&10&10%
Door Hangers 50@50&10%
Fulton's Butt Gauge 30&10%
Stanley R. & L. Co.'s Butt & Babbet Gauge 20@20&10&10%
Wire, Brown & Sharpe's 25%
Wire, Morse's 25%
Wire P., S. & W. Co 30&10%

### Gimlets— Single Cut—

*Nail, Metal, Assorted, gro.* $1.40@1.50
*Spike, Metal, Assorted gro.* $2.30@3.50
*Nail, Wood Handled, Assorted, gro.* $1.75@2.00
*Spike, Wood Handled, Assorted gro.* $4.25@4.50

### Glass, American Window

See *Trade Report.*

### Glasses, Level—

Chapin-Stephens Co 60@60&10&10%

### Glue—Liquid Fish—

*Bottles or Cans, with Brush* 25@50%
*Cans (½ pts., pts., qts., ½ gal., gal.)* 25@48%
International Glue Co. (Martin's) 40&10@50%

### Grease Axle—

*Common Grade, gro.* $4.50@5.50
Dixon's Everlasting, 10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs., ₱ doz. 1 lb $1.20; 2 lb $2.00

### Grips, Nipple—

Perfect Nipple Grips 40&10&2%

### Griddles, Soapstone—

Pike Mfg. Co 33⅓@33⅓&10%

### Grindstones—

Bicycle Emery Grinder $6.50
Bicycle Grindstones, each $2.50@3.00
Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz. $2.00 } 33⅓%
Pike Mower Knife and Tool Grinder, each $6.00 }
Velox Ball Bearing, mounted, Angle Iron Frames each, $3.23

## Halters and Ties—

Covert Mfg. Co.:
Web 45&2%
Jute Rope 40&5&5%
Sisal Rope 20&5%
Covert's Saddlery Works:
Web and Leather Halters 70%
Jute and Manila Rope Halters 70%
Sisal Rope Halters 60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties 60&10%

### Hammers—

**Handled Hammers—**

Heller's Machinists' 40&10&40&10&10%
Heller's Farriers 40&10&40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 40&40& 0&10%
Peck, Stow & Wilcox 40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail 33⅓&7½&33⅓&10&7½%
Engineers' and B. S. Hand 50&7½&5&50&10&7½&5%
Machinists' Hammers 50&5&50&10&5%
Riveting and Tinners' 40&2½&40&10&2½%
Sargent's C. S. New List 40%

### Heavy Hammers and Sledges—

*Under 3 lb.* lb 50c
*3 to 5 lb.* lb 45c
*Over 5 lb.* lb. 30c } 75&10&5 @80%
*Wilkinson's Smiths'* 9½c@10c lb.

### Handles—

**Agricultural Tool Handles—**

*Axe, Pick, &c.* 45@50c&5%
*Hoe, Rake, &c.* 45@50c&5%
*Fork, Shovel, Spade, &c.:*
*Long Handles* 45@50&5%
*D Handles* 50%

**Cross-Cut Saw Handles—**

Atkins' 40&5%
Champion 45@45&10%
Disston 50%

**Mechanics' Tool Handle.** 75

*Auger, assorted* gro. $2.50@2 85
*Brad Awl* gro. $1.65@1 85
*Chisel Handles:*
*Apple Tanged Firmer, gro. ass'd.* $2.40@2.65
*Hickory Tanged Firmer, gro. ass'd.* $2 15@2.40
*Apple Socket Firmer, gro. ass'd,* $1.75@1.95
*Hickory Socket Firmer, gro. ass'd.* $1.45@1.60
*Hickory Socket Framing, gro. ass'd.* $1.60@1.75
*File, assorted* gro. $1.30@1.40
*Hammer, Hatchet, Axe, &c.* 50%
*Hand Saw, Varnished, doz.* 80@85c
*Not Varnished* 65@75c
*Plane Handles:*
*Jack, doz.* 30c; *Jack Bolted* 75c
*Fore, doz.* 45c; *Fore, Bolted* 90c
Chapin-Stephens Co.:
Carving Tool 40@40&10%
Chisel 65@65&10%
File and Awl 65@65&10%
Saw and Plane 40@40&10%
Screw Driver 40@40&10%
Millers Falls Adj. and Ratchet Auger Handles 15&10%
Nicholson Simplicity File Handle, ₱ gro. $0.85@$1.50

### Hangers—

NOTE.—*Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.*

*Barn Door, New Pattern, Round Groove, Regular:*

| *Inch* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Single Doz.* | $0.90 | 1.25 | 1.40 | 1.95 | 2.50 |

*Barn Door, New England Pattern, Check Back, Regular:*

| *Inch* | 3 | 4 | 5 | 6 |
|---|---|---|---|---|
| *Single Doz.* | $1.30 | 1.85 | 2.50 | 3.00 |

Allith Mfg. Co.
Reliable No. 1 per doz. $12,00
Reliable No. 2 per doz. $15,00
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle 60%
Roller Bearing 60&10%
Lane Bros. Co.:
Parlor, Ball Bearing $4.15
Parlor, Standard $3.35
Parlor, New Model $3.85
Parlor New Champion $2.25
Barn Door, Standard, 5&10&10&5%
Hinged $6.40
Covered 50&10&10%
Special 50&10&10&5%
Lawrence Bros.:
Advance 30%
Cleveland 60&10%
Crown 60%
Giant 50&10%
New York 60%
Peerless 60&10%
Sterling 60%
Swing, No. 95 60%
Union, No. 44, $5.00; No. 45 $7.00; No. 46, $9.00
McKinney Mfg. Co.:
No. 1, Special, $15 60&10%
No. 2, Standard, $18 60&10%
Hinged Hangers, $16 50%
Meyers' Stayon Hangers 60%
C. S. Smith Mfg. Co.:
Lundy Parlor Door 50&10%
Monarch Barn Door 60&10%
Never Jump Hinge 50&10%
Peerless 60&10%
Perfection 70&5%
Phœnix 70&5%
Wagner's Adjustable 70&10%
Warehouse Anti-Friction 60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3 $2.25
Imp'd Wood Track No. 5 $2.25
Imp'd Steel Track No. 7 $2.70
Imp'd Steel Track No. 7 $2.65
Ball B'r'g Steel Track No. 9 $2.50
Ball B'r'g Steel Track No. 10 $2.50
Roller B'r'g Steel Track No. 11 $2.45
Roller B'r'g Steel Track No. 12 $2.40
Ball B'r'g Steel Track No 13 $2.75
Roller B'r'g Steel Track No. 14 $2 65
Ball B'r'g Trolley Track No 15 40%
Ball Brg Trolley Track No. 19 40&5%
Ball Bearing Tandem Trolley Track No. 16 40%
Silent Adjustable Track No. 18 40%
Auto Adjustable Track No. 22 40%
Trolley B. D. No. 17 $1.60
Trolley F. D. No. 120 $2.70
Trolley F. D. No 121 $2.55
Trolley F. D. No. 151 $3.00
Roller Bearing D. D. No. 23 70&5%
Roller Bearing D. S. B. D. 70&5%
Anti Friction B. D. 60&10%
Ives' Wood Track No. 1 $2.15
Ives' Imp'd Wood Track No. 2 $2.15
Safety Door Hanger Co.:
Storm King Saftey 60%
U. S. Standard Hinge 60%
Stowell Mfg. and Foundry Co.
Acme Parlor Ball Bearing 40%
Ajax Hinge Door 60%
Apex Parlor Door 50&10&5%
Atlas 60%
Baggage Car Door 50%
Climax Anti-Friction 50&10%
Elevator 40%
Express 50%
Freight Car Door 60%
Interstate 40&10%
Lundy Parlor Door 50&10%
Magic 60%
Matchless 60&10%
Nansen 70&5%
Parlor Door 53&10%
Railroad 50&10%
Rex Hinge Door 60%
Street Car Door 50%
Steel, Nos. 300, 404, 500 50&10%
Underwriter's Fire Door 40%
Wild West Warehouse Door 50%
Zenith for Wood Track 50&10%
A. L. Swett Iron Works:
Eagle 60&10%
Hylo 50&10%
Perfection 60%
Pilot 50%
Taylor & Boggis Foundry Co.'s Kidder's Roller Bearing 50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing 60&10%
C. J. Roller Bearing 60&10%
Cycle Ball Bearing 50%
Dwarf Ball Bearing 40%
Ives, Wood Track 60&10%
L. T. Roller Bearing 60&10&5%
New Era Roller Bearing 50&10%
O. K. Roller Bearing 60&10&5%
Prindle, Wood Track 60%
Richards' Wood Track 60%
Richards' Steel Track 50&10%
Spencer Roller Bearing 60&10%
Tandem Nos. 1 and 2 60%
Underwriters' Roller Bearing 40%
Velvet 50%
Wilcox Auditorium Ball Bearing 20%
Wilcox Barn Trolley No. 133 40%
Wilcox Elv. Door, Nos 112 and 122½ 5%
Wilcox Elv. Door, No. 132 30%
Wilcox Fire Trolley, Roller Bearing 30%
Wilcox Le Roy Nolseless Ball Bearing 40%
Wilcox New Century 50&10&10%
Wilcox O. K. Steel Track 50%
Wilcox O. K. Trolley 50%
Wilcox Trolley Ball Bearing 40%
Wilcox Wideman Narrow Gauge, Ball Bearing 40%
For Track, see *Rail*

Extra 5&10% often given.

### Hangers, Garment—

Western, W. G. Co. 70&10%

### Gate—

Myers' Patent Gate Hangers, ₱ doz net 4.50

### Hasps—

McKinney's Perfect Hasp, ₱ doz. 55%

### Hatchets—

*Regular list* 40@40&10&5%

### Heaters, Carriage—

Clark, No 3, $2.25; No. 2D, $2.5; No 3E, $2.5; No. 1, $2.50 each 15%
Clark Coal, $3.75 ₱ doz. 10%

### Hinges—

**Blind and Shutter Hinges—**

*Surface Gravity Locking Blind: (Victor; National; 1838 O P Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | 1 | 3 | 5 |
|---|---|---|---|
| *Doz. pair* | $0.85 | 1.75 | 3.50 |

*Mortise Shutter: (L. & P., O. S., Dixie, &c.)*

| *No.* | 1 | 1½ | 2 | 2½ |
|---|---|---|---|---|
| *Doz. pair* | $0.70 | .65 | .60 | .55 |

*Mortise Reversible Shutter, (Buffalo, &c.)*

| *No.* | 1 | 1½ | 2 |
|---|---|---|---|
| *Doz. pair* | $0.75 | .70 | .65 |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 10%
Parker 70@75%
Reading's Gravity 50&5%
Sargent's, Nos. 1, 3, 5, 11 & 12 70&10@75%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.80; with screws, $1.15.
Wrightsville H'dware Co.:
O. S., Lull & Porter 7 &5%
Acme, Lull & Porter 75%
Queen City Reversible 75%
Stenger's Positive Locking, Nos. 1 & 3 70&10%
Shepard's Noiseless, Nos. 60, 65, 55 70&10%
Niagara, Gravity Locking, Nos 1, 3 & 5 75%
1903, Old Pat'n, Nos. 1, 3 & 5 75%
Tip Pat'n, Nos. 1, 3& 5 5%
Buffalo Gravity Locking, Nos. 1, 3 & 5 75%
Shepard's Double Locking, Nos. 20 & 25 70%
Champion Gravity Locking, No. 75 75%
Steamboat Gravity Locking, No. 10 75%
Pioneer, Nos. 000, 45 & 55 75%
Empire, Nos. 101 & 103 70%
W. H. Co.'s Mortise Gravity Locking, No. 2 60%
Whipple's Patent Automatic 30%

Extra 5&10% often given.

**Gate Hinges—**

*Clark's or Shepard's—Doz. sets:*

| *No.* | 1 | 2 | 3 |
|---|---|---|---|
| *Hinges with Latches* | $2.00 | 3.50 | 5.00 |
| *Hinges only* | $1.40 | 2.05 | 3.80 |
| *Latches only* | .70 | .70 | .35 |

*New England:*
*With Latch* doz. @$2.00
*Without Latch* doz. @$1.60
*Reversible Self-Closing:*
*With Latch* doz. @$1.75
*Without Latch* doz. @$1.35
*Western:*
*With Latch* doz. $1.75
*Without Latch* doz. $1.15
Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

| No. | 1 | 2 | 3 |
|---|---|---|---|
| Hinges with Latches | $2.00 | 2.70 | 5.00 |
| Hinges only | 1.40 | 2.05 | 3.80 |
| Latches only | .70 | .70 | 1.35 |

**Spring Hinges—**

*Holdback Cast Iron gro.* $9.00@9.50
*Non-Holdback, Cast iron* gro. $8.00@8.50

J. Bardsley
Bardsley's Non-Checking Mortise Floor Hinges 45%
Bardsley's Patent Checking 15%
Bommer Bros.:
Bommer Ball Bring Floor Hinges 40%
Bommer Spring Hinges 40%
Chicago Spring Butt Co.:
Chicago Spring Hinges 25%
Triple End Spring Hinges 50%
Chicago (Ball Bearing) Floor Hinge 50%
Garden City Engine House 25%
Keene's Saloon Door 25%
Columbian Hdw. Co.:
Acme, Wrt. Steel 30%
Acme, Brass 25%
American 30%
Columbia, No. 14 ₱ gr. $9.00
Columbia, No. 18 ₱ gr. $25.00
Columbia, Adjustable, No. 7. ₱ gr. $12.00
Gem, new list 30%
Clover Leaf ₱ gr. $12.50
Oxford, new list 30%
Lawson Mfg. Co.:
Matchless 30%
Matchless Pivot 45%
Shelby Spring Hinge Co.:
Crown Jamb Hinge 40%
Chief Ball Bearing Floor Hinge 45%
Royal Ball Bearing Floor Hinge 15%
The Stover Mfg. Co.:
Ideal, No. 10, Detachable, ₱ gr $12.50
Ideal, No. 4 ₱ gr. $9.00
New Idea No. 1 ₱ gr. $9.00
New Idea, Double Acting 35%

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—

*Strap and T Hinges, &c., list Mar. 15, 1901:*
*Light Strap Hinges* 80c&5%
*Heavy Strap Hinges* 80c&20&10%
*Light T Hinges* 75c&10&5%
*Heavy T Hinges* 75c&5%
*Extra Heavy T Hinges* 80c&20%
*Hinge Hasps* 70%
*Cor. Heavy Strap* 80c&20&10%
*Cor. Ex. Heavy T* 80c&20%
*Extra 10&5@10c&10&5%*

*Screw Hook and Strap.*
*6 to 12 in* lb. 3½c
*14 to 20 in* lb. 3 c
*22 to 36 in* lb. 2½c
*Screw Hook and Eye:*
*¾ to 1 inch* lb. 6 c
*1¼-inch* lb. 7 c
*1½-inch* lb. 9 c

### Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers 25%

### Hods, Coal—

| *Inch* | 15 | 16 | 17 | 18 |
|---|---|---|---|---|
| *Galv. Open* | $2.50 | 2.75 | 3.00 | 3.25 ₱ doz. |
| *Jap. Open* | $2.00 | 2.25 | 2.50 | 2.75 ₱ doz. |
| *Galv. Funnel* | $3.00 | 3.25 | 3.50 | 3.75 ₱ doz. |
| *Jap. Funnel* | $2.50 | 2.75 | 3.00 | 3.25 ₱ doz. |

### Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar each $1.45
Steel Brick each $1.10

### Hoes— Eye—

*Scovil and Oval Pattern* 60&10@60c&10c&10%
*Grub, list Feb. 23, 1899* 70c&10@75%
D. & H. Scovil 30%

### Handled—

*Aug. 1, 1899, List:*
*Field and Garden* 70c&10%
*Smith's Patent* 50%
*Meadow & Rhode Island* 75%
*Black Diamond* 70c&10%
*Mortar and Street* 70c&10c&10%
*Planters'* 75c&12½&5%
*Cotton* 70c&10c&10%
*Cotton Chopper* 75c&12½&5%
*Weeding Hoes* 66⅔&15%
*Steel Weeders* 66⅔&15%
*Malleable Weeders* 66⅔&15%
Ft. Madison Cotton Hoe 70&10&10%
Ft. Madison Crescent Cultivator Hoe per doz 70&10%
Ft. Madison Mattock Hoes:
Regular Weight ₱ doz. 66⅔%
Junior Size ₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz. 50%
Ft. Madison Dixie Tobacco Hoe 75&10&7½%
Kretsinger's Cut Easy 70&10%
Garret Hoe 55%
W. & C. Ivanhoe 75&2%
B. B. 6 lb., Cultivator Hoe $3.15
B. B., 6½ lb. $3.35
Acme Weeding ₱ doz., net, $4.35
W. & C. Lightning Shuffle Hoe, ₱ doz. $4.85

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00 45&10%

### Door—

Empire 50%
Barnsley's 45%

### File and Tool—

Nicholson File Holders and File Handles 33⅓@40%

### Hooks—

**Cast Iron—**

Bird Cage, Reading 50&10%
Bird Cage, Sargent's List 60%
Ceiling, Sargent's List 50&10%
Clothes Line, Reading List 50%
Clothes Line, Sargent's List 50&20&10%
Coat and Hat, Sargent's List 50&5&10%
Clothes Line, Stowell's 70%
Coat and Hat, Reading 50%
Coat and Hat, Stowell's 70%
Coat and Hat, Wrightsville 65%
Harness, Reading List 50&10%
Harness, Stowell's 60%
School House, Stowell's 70%

**Wire—**

*Belt* 80c&10%
*Wire C. & H. Hooks* 75@75c&10%
Atlas, Coat and Hat:
Single Cases 70%
10 Case Lots 70&10%
Columbian Hdw. Co. Gem 60&10%
Parker Wire Goods Co.: King 70&10%
Western W. G. Co. Molding 75%

Wire Goods Co:
Acme.....60&10%
Chief.....70%
Crown.....70&10%
Czar.....65%
V Brace.....70&10%
Czar Harness.....50&10%

### Wrought Iron—
*Box, 6 in., per doz. $1.00; 8 in., $1.25; 10 in., $2.50.*
*Cotton.....doz. $1.05@1.25*
Wrought Staples, Hooks, &c.—
See *Wrought Goods.*

### Miscellaneous—
*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50*

| *Grass.....Nos.* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| *Best.....* | *$1.50* | *1.75* | *2.00* | |
| *Common.....* | *$1.30* | *1.50* | *1.60* | *1.60* |

*Potato and Manure.....60&15%*
*Wk fletres.....lb. 5¾@6c*
*Hooks and Eyes:*
*Brass.....60&10&10@70%*
*Malleable iron.....70&5&70&10%*
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $5.25 net
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

### Horse Nails—See *Nails, Horse*
### Horseshoes—
See *Shoes, Horse.*

### Hose Rubber—
*Garden Hose, ¾-inch:*
*Competition.....ft. 4½@ 5 c*
*3-ply Standard.....ft. 6½@ 7 c*
*4-ply Standard.....ft. 7½@ 8 c*
*3-ply extra.....ft. 8½@ 9 c*
*4-ply extra.....ft. 10 @10½c*
*Cotton Garden, ¾-in., coupled:*
*Low Grade.....ft. 6 @7 c*
*Fair quality.....ft. 8 @9 c*

### Irons—Sad—
*From 4 to 10.....lb. 2¾@3 c*
*B. B. Sad Irons.....lb. 3¼@3½c*
*Chinese Laundry.....lb. 4¾@5c*
*Chinese Sad.....lb. 4@4¼c*
*Mrs. Potts', per set:*

| *Nos.....* | *50* | *55* | *60* | *65* |
|---|---|---|---|---|
| *JapdTops* | *71* | *68* | *81* | *78* |
| *TinnTops* | *74* | *71* | *84* | *81* |

*New England Pressing.lb..3¾@4c*

### Pinking—
*Pinking Irons.....doz. 50@60c*

### Soldering—
*Soldering Coppers 2½ and 3..19@20c*
*1½ and 2.....21@22c*

### Jacks Wagon—
Covert Mfg. Co.:
Auto Screw.....30&5%
Steel.....45&2%
Covert's Saddlery Works':
Daisy.....60&10%
Victor.....60&10%
Lockport.....50%
Lane's Steel.....30&10%

### Kettles—
*Brass, Spun, Plain.....20@25%*
Enameled and Cast Iron—See *Ware, Hollow.*

### Knives—
#### Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Sheaf & Cutlery Co.....50%
Hay and Straw—See *Hay Knives.*

#### Corn—
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

#### Drawing—
*Standard List.....70&5@70&10%*
Bradley's.....35%
C. E. Jennings & Co. Nos. 45, 46..60&10%
Jennings & Griffin. Nos. 51, 52, 60&10&10%
Ohio Tool Co.'s.....70%
Swan's.....70&10&2½%
Watrous.....10½&10%
L. & L. J. White.....20&5@25%

### Hay and Straw—
Lightning.....₱ doz. $6.50@7.00
Iwan's Sickle Edge.....₱ doz. $10.00
Iwan's Serrated.....₱ doz. $10.00
Maine.....₱ doz. $8.50

### Mincing—
Buffalo.....₱ gro. $13.00

### Miscellaneous—
*Farriers'.....doz. $3.00@3.25*
Westenholm's.....₱ doz. $3.00@3.25

### Knobs—
*Base, 2¼-inch, Birch, or Maple, Rubber tip, gro.....$1.10@1.15*
*Carriage, Jap, all sizes..gro. 40@45c*
*Door, Mineral.....doz. 65@70c*
*Door, Por. Jap'd.....doz. 70@75c*
*Door, Por. Nickel....doz. $2.05@2.15*
Bardsley's Wood Door, Shutter, &c...15%
Picture, Sargent's.....60&10&10%

### Lacing Leather—
See *Belting Leather—*

### Ladders, Step Etc.—
Lane's Store.....25%
Myers Noiseless Store Ladders.....50%

### Ladies—Melting—
L. & G. Mfg. Co, Low List.....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....45&10%

### Lanterns—Tubular—
*Regular Tubular No. 0..doz. $4.35@4.75*
*Lift Tubular..No. 0..doz. $4.75@5.25*
*Hinge Tubular. No. 0..doz. $4.75@5.25*
*Other Styles.....40@10@40&10&5%*

### Bull's Eye Police—
*No. 1, 2¾ inch.....$2.50@2.75*
*No. 2, 3 inch.....$2.75@3.00*

### Lasts and Stands Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

### Latches—
#### Thumb—
*Roggin's Latches, with screw..dz 35@40c*

### Leaders Cattle—
*Small.....doz. 55c; large, 60c*
Covert Mfg. Co.....15&2%

### Lifters, Transom—
R. & E.....33⅓%

### Lines—
| *Wire Clothes, Nos...* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet.....* | *$2.20* | *2.00* | *1.65* |
| *75 feet.....* | *$1.80* | *1.70* | *1.30* |

Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3.....40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 - ₱ gr.....20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25..20%
Anniston Waterproof Clothes, 50 ft., ₱ gro.: $26.00; Gilt Edge, $24.00; Air Line $24.00; Acme, $19.00; Alabama, $17.00; Empire, $18.00; Advance, $15.00; Orlole, $22.00; Albermarle, $15.00; Eclipse, $13.50; Chicago, $12.90; Standard, $11.00; Columbia, $9.50.

### Locks—Cabinet—
*Cabinet Locks.....33⅓@33⅓&@7½%*

### Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]
Reading Hardware Co.....50%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

### Elevator—
Stowell's.....50%

### Padlocks—
*Wrought Iron.....75&10&5@80&5%*
R. & E. Mfg. Co. Wrt. Steel and Brass...75@75&10%

### Sash, &c.—
Ives' Patent.:
Bronze and Brass.....62½%
Crescent.....50%
Iron.....62½%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Reading.....net 50%

### Machines—Boring—
*Com. Upright, Without Augers..$2.00*
*Com. Angular, Without Augers..$2.25*
Without Augers.

| R. & E. Mfg. Co.: | Upright. | Angular. |
|---|---|---|
| Improved No. 3. | $4.25 | No. 1 $5.00 |
| Improved No. 4. | 3.75 | No. 2. 3.38 |
| Improved No. 5. | 2.75 | |
| Jennings'..No. 4, | 3.15 | No. 1, 3.50 |
| Millers' Falls..... | | 5.75 |
| Snell's, Rice's Pat. | 2.50 | 2.75 |

### Corking—
Reisinger Invincible Hand Power.....₱ doz. $48.00

### Fence—
Williams Fence Machines.....each, $5.50

### Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.30%

### Ice Cutting—
Chandler's.....15&10%

### Washing—
| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1; Boss Rotary. | $57.00 |
| Boss No. 7; Dietz Rotary | 60.00 |
| Champion Rotary; Banner No. 1. | 54.00 |
| Standard Champion No. 1. | 48.00 |
| Standard Perfection. | 36.00 |
| Cinti Square Western. | 30.00 |
| Uneeda American, Round. | 29.00 |

### Mallets—
*Hickory.....45&5@50%*
*Lignumvitæ.....45&5@50%*
*Tinners', Hickory and Applewood, doz.....50@55c*

### Mashers, Vegetable—
Western, W. G. Co., Potato.....60&10%

### Mats—Door—
Elastic Steel (W. G. Co.).....10%

### Mattocks—
See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk*

### Mills—Coffee, etc.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Sun, No. 1080, 1 lb mill.....₱ doz. $3.00
Swift, Lane Bros Co.....30%

### Mowers, Lawn—
*Net prices are generally quoted.*
*Cheap.....all sizes, $1.75@2 00*
*Good.....all sizes, $2.25@2.50*

| | *10* | *12* | *14* | *16-inch* |
|---|---|---|---|---|
| *High Grade* | *4.25* | *4.50* | *4.75* | *5.00* |

Continental.....50&5%
Great American.....70%
Great American Ball Bearing, new list.70%
Quaker City.....70%
Pennsylvania.....50&5%
Pennsylvania, Jr., Ball Bearing.....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K. T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, low list...40&5%

### Nails—
*Cut and Wire. See Trade Report.*
*Wire Nails and Brads, Papered. List July 20, 1899...85&10&10@90%*
*Hungarian, Finishing, Upholsters', &c. See Tacks.*

#### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| A. C..... | 25 | 23 | 22 | 21 | 21 | 40&5% |
| C. B. K..... | 25 | 23 | 22 | 21 | 21 | 40% |
| Anchor | 25 | 21 | 20 | 19 | 18 | 40&5% |
| Champ'n. | 28 | 26 | 25 | 24 | 23 | 50% |
| Coleman... | 18 | 13 | 12 | 11 | 11 | net |
| Maud S. | 25 | 23 | 22 | 21 | 21 | 50% |
| New Haven | 23 | 21 | 20 | 19 | 18 | 40&5% |
| Putnam.... | 23 | 21 | 20 | 19 | 18 | 33⅓&5 |
| New Pu'n'm | 19 | 18 | 17 | 16 | 16 | 10&10% |

Western, per lb.....8½¢
*Jobbers' special brands, per lb. 8@8½¢*

### Picture—

| | *1½* | *2* | *2½* | *3* | *3½ in.* |
|---|---|---|---|---|---|
| *Brass Head.* | *.55* | *.60* | *.70* | *.95* | *1.00 gro.* |
| *Por. Head...* | *..* | *1.10* | *1.10* | *1.10* | *.. gro.* |

### Nippers, See *Pliers and Nippers.*

### Nuts—
*Cold Punched: Off list.*
*Mfrs. or U. S. Standard.*
*Square, plain.....$5.10*
*Hexagon, plain.....$5.60*
*Square, C. T. & R.....$5.50*
*Hexagon, C. T. & R.....$6.00*
*Hot Pressed:*
*Mfrs., U. S. or Nar. Gauge Stan'd.*
*Square Blank.....$5 80*
*Hexagon Blank.....$6.30*
*Square Tapped.....$5 80*
*Hexagon Tapped.....$6 30*

### Oakum—
*Best or Government.....lb. 6¼c*
*Navy.....lb. 4½c*
*U. S. Navy.....lb. 5½c*
*Plumbers' Spun Oakum.....2¾c*
*In carload lots ¼c lb. off f. o. b. New York.*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Brass and Copper.....50&10%*
*Tin or Steel.....70&10&75%*
*Zinc.....65&10%*
*Chase or Paragon:*
*Brass and Copper.....45&10&50%*
*Tin or Steel.....75@75&10%*
*Zinc.....65%*
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70&70&10%
Railroad Oilers etc.....60&60&10%

### Openers—Can—
*French.....doz. 55c*
*Iron Handle.....doz. 25@27c*
*Sprague, Iron Hdle..per doz 35@40c*
*Sardine Scissors...doz. $1.75@3.00*
Marvel.....per doz. $1.25
National.....50%
Stowell's Sprague.....per doz. 35@45¢
Tip Top.....per doz. $0.75
Triumph Shear.....₱ gro. $9.00

### Egg—
Nickel Plate.....per doz., $2.00
Silver Plate.....per doz., $4.00

### Packing—
*Asbestos Packing, Wick and Rope, 14½@15c lb.*

#### Rubber—
*Sheet, C. I.....8@10c*
*Sheet, C. O. S.....9@13c*
*Sheet, C. B. S.....10@14c*
*Sheet, Pure Gum.....50@65c*
*Sheet, Red.....40@50c*
Jenkins' Standard, ₱ lb 80s....25@25&5%

#### Miscellaneous—
*American Packing.....7@10c lb.*
*Cotton Packing.....16@35c lb.*
*Italian Packing.....9@12½c lb.*
*Jute.....4@4½c lb.*
*Russia Packing.....8@11c lb.*

### Pails—Creamery
S. & S. & Co., with gauges.. No 1 $6.25; No. 2, $5.50 ₱ doz.

#### Galvanized—
Price per doz.

| *Quart.....* | *10* | *6* | *14* |
|---|---|---|---|
| *Water, Regular..* | *1.50* | *1.75* | *2.00* |
| *Water, Heavy....* | *2.75* | *3.00* | *3.25* |
| *Fire, Rd. Bottom.* | *2.30* | *2.60* | *2.80* |
| *Well.....* | *2.25* | *2.50* | *2.75* |

### Pans—Dripping—
*Standard List.....60&10@60&10&5%*

#### Fry—
*Common Lipped:*

| *No.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.85* | *1.00* | *1.10* | *1.30* | *1.90* |

### Roasting and Baking—
Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.25; 20, $5.75; 30, $6.25.
Savory, ₱ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ₱ gro.:

| No. | 40 | 50 | 60 | 140 | 150 | 160 |
|---|---|---|---|---|---|---|
| | $30.00 | 35.0 | 42.00 | 31.00 | 39.00 | 46.00 |

### Paper—Building Paper—

| *Asbestos:* | *lb.* |
|---|---|
| *Building Felt.....* | *2¾c* |
| *Mill Board, sheet, 40 x 40 inches* | *3½c* |
| *Mill Board, roll, thicker than 1-16 inch.....* | *3½c* |
| *Mill Board, roll, 1-16 in. thick and less.....* | *2½c* |

| | *Per roll* |
|---|---|
| *Rosin Sized Sheathing:* | *500 sq. ft.* |
| *Light wt., 25 lbs. to roll..* | *$0.40@0.45* |
| *Medium wt., 30 lbs. to roll..* | *$0.45@0.50* |
| *Heavy wt., 40 lbs. to roll..* | *$0.65@0.70* |
| *Black Water Proof Sheathing, 500 Sq. ft., 1 ply, 60c; 2 ply, 85c; 3 ply, $1.10; 4 ply, $1.25.* | |
| *Deafening Felt, 2, 6 and 4½ sq. ft. to lb., ton.....* | *$41.00* |
| *Red Rope Roofing, 250 sq. feet per roll.....* | *$1.75* |

NOTE.—*These goods are often sold at delivered prices.*

#### Tarred Paper.
*1 ply (roll 500 sq. ft.), ton..$32.50@35.00*
*2 ply, roll 108 sq. ft.....55@60c*
*3 ply, roll 108 sq. ft.....78@80c*
*Slater's Felt (roll 500 sq. ft.).....75c*
NOTE.—*Above prices often include delivery, and are for Eastern territory, where prices are controlled by agreement between the manufacturers. In open territory much lower prices are current.*
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.00

### Sand and Emery—
*Flint Paper and Cloth...50&10@60%*
*Garnet Paper and Cloth.....25%*
*Emery Paper and Cloth...50&10@60%*

### Parers—Apple—
Advance.....₱ doz. $4.50
Baldwin.....₱ doz. $5.00
Bonanza Improved.....each $6.50
Daisy.....₱ doz $4.00
Dandy.....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
Little Star.....₱ doz. $5 00
New Lightning.....₱ doz. $7.50
Reading 72.....₱ doz. $4.00
Reading 78.....₱ doz. $7.00
Rocking Table.....₱ doz. $6.00
Turn Table '98.....₱ doz. $6.75
White Mountain.....₱ doz. $6.00

### Potato—
Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6 00

### Picks and Mattocks—
*List Feb. 23, 1899.....70&5@70&10%*

### Pinking Irons—
See *Irons, Pinking.*

### Pins—Escutcheon—
*Brass.....60@60&10%*
*Iron, list Nov. 11, '85.....60@60&10%*

### Pipe, Cast Iron Soil—
*Standard, 2-6 in.....50&10*
*Extra Heavy, 2-6 in.....65%*
*Fittings.....70%*

### Pipe, Merchant,
*Steel Carload Lots, f. o. b., Pittsburgh.*

| *Merchant Pipe.* | *Black.* | *Galvanized.* |
|---|---|---|
| *⅛, ¼, ⅜ inch.....* | *68%* | *58%* |
| *½ inch.....* | *71%* | *61%* |
| *¾ to 6 inch.....* | *75%* | *65%* |
| *7 to 12 inch.....* | *71%* | *61%* |

### Pipe, Sewer—
*Jobbers' Prices—*
*Standard Pipe and Fittings, 2 to 24 in.*
*New England.....67%*
*New York and New Jersey.....70%*
*Maryland, Delaware, East Penn.72%*
*West Penn and West Va.....73%*
*Virginia.....75%*
*Ohio, Michigan and Ky.....75%*
*Indiana.....77%*
*Carload lots are generally delivered.*

### Pipe, Stove—
Edwards' Nested Stove Pipe:

| | C. L. | L. C. L. |
|---|---|---|
| 5 in., per 100 joints ... | $7.50 | $8 50 |
| 6 in., per 100 joints.... | 8.00 | 9.00 |
| 7 in., per 100 joints.... | 9.00 | 10.00 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, First quality....40&5@40&10%*
*Bench, Second qual....50&5@50&10%*
*Molding.....33½&5@33½&10%*
Bailey's (Stanley R. & L. Co) 5&10@25&10&10%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Gage Self Setting.....35%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....40@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union.....60%

#### Iron Planes—
Bailey's (Stanley R. & L. Co).....25&10@25&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Sargent's.....60@60&10%
Union.....60%

### Plane Irons—
*Wood Bench Plane Irons.....30&5@30&10%*
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co...20&10@20&10&10%
L. & L. J. White.....20&5@25%

### Planters, Corn, Hand.
Kohler's Eclipse.....₱ doz. $8.50

### Plates—
*Felloe.....lb. 3¼@4c*
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00.....50%

### Pliers and Nippers—
*Button Pliers.....75@75&10%*
*Gas Burner, per doz., 5 in., $1.25@ $1.50; 6 in., $1.45@$1.50*

| *Gas Pipe..* | *7* | *8* | *10* | *12-in.* |
|---|---|---|---|---|
| | *$2.00* | *$2.25* | *$3.00* | *$3.75* |

Acme Nippers.....50@50&5%
Bernard's:
Cutting Nippers.....33⅓%
Parallel, Pliers.....33⅓%
Paragon Pliers.....50%
Lodi Pliers.....50%
Elm City Fence Pliers.....33⅓%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Improved Button.....70&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers, and Tools 40&10&40&10&10%
P., S. & W. Tinners' Cutting Nippers, 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

### Plumbs and Levels—
Chapin Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.....30@30&10&10%
Pocket Levels.....30@30&10&10%
Level Glasses.....60@60&10&10%
Disston's Plumbs and Levels.....20%
Disston's Pocket Levels.....20
C. E. Jennings & Co.'s Iron.....25&10%
C. E. Jennings & Co.'s Iron, Adjustable.....33⅓&10%
Stanley R. & L. Co...20&10@30&10&10%

Stanley's Duplex..... 20@20&10&10%
Woods' Extension..... 33⅓&5

### Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $6.00; No. 2, $8.00; No. 3, $10.00; No. 4, $12.00..... 50%
Points, Glaziers'—
*Bulk and 1 lb. papers*..... *lb. 6½c*
*½-lb. papers*..... *lb. 6½c*
*¼-lb. papers*..... *lb. 6½c*

### Pokes, Animal—

Ft. Madison Hawkeye..... ₱ doz. $3.25
Ft. Madison Western..... ₱ doz. $4.00

### Police Goods—

*Manufacturers' Lists*..... 25@25&5%
Tower's..... 25%

### Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72..... 40%
Prestoline Paste..... 40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ¼ ℔ boxes, ₱ doz. $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz..... $2.00

### Stove—

Black Eagle Benzine Paste, 5 ℔ cans .. ₱ ℔ 10¢
Black Eagle, Liquid, ½ pt. cans ₱ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₱ gro. $9.00
Black Kid Paste, ½ ℔ can..... each, $0.65
Ladd's Black Beauty, gr. $10.00..... 50%
Joseph Dixon's, ₱ gr. $5.75..... 10%
Dixon's Plumbago..... ₱ ℔ 8¢
Fireside..... ₱ gr. $2.50
Gem, ₱ gr. $4.50..... 10%
Japanese..... ₱ gr. $3.50
Jet Black..... ₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans..... ₱ doz. $1.50
Wynn's:
Black Silk, 5 ℔ pail..... each 70¢
Black Silk, ½ ℔ box..... ₱ doz. $1.00
Black Silk, 5 oz. box..... ₱ doz. $0.75
Black Silk, ½ pt. liq..... ₱ doz. $1.00

### Poppers, Corn—

*1 qt., Square*..... *gro. $9.00*
*1 qt., Round*..... *gro. $10.00*
*1½ qt., Square*..... *gro. 11.00*
*2 qt., Square*..... *gro. 13.00*

### Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

### Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts, each..... $1.30

### Potato Parers—

See *Parers, Potato.*

### Pots— Glue—

*Enameled*..... 40%
*Tinned*..... 35%

### Powder—

*In Canisters:*
*Duck, 1 lb. each*..... *45c*
*Fine Sporting, 1 lb. each*..... *75c*
*Rifle, ½-lb. each*..... *15c*
*Rifle, 1-lb. each*..... *25c*
King's Semi-Smokeless:
Keg (25 ℔ bulk)..... $6.50
Half Keg (12½ ℔ bulk)..... $3.50
Quarter Keg (6¼ ℔ bulk)..... $1.90
Case 24 (1 ℔ cans bulk)..... $8.50
Half case (1 ℔ cans bulk)..... $4.50

| King's Smokeless: | Shot Gun | Rifle |
|---|---|---|
| Keg (25 ℔ bulk) | $12 00 | $15.00 |
| Half Keg (12½ ℔ bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ ℔ bulk) | 3.25 | 4.00 |
| Case 24 (1 ℔ cans bulk) | 14.00 | 17 00 |
| Half case 12 (1 ℔ cans bulk) | 7.25 | 8 75 |

Robin Hood Smokeless Shot Gun..50&10%

### Presses—

#### Fruit and Jelly—

Enterprise Mfg. Co..... 20@25%
Sensible..... 33⅓%
2 qt., $2.00; 4 qt., $4.00; 10 qt., $6.00 each.

#### Seal Presses—

Morrill's No. 1, per doz. $20.00..... 50%

### Pruning Hooks and Shears—See *Shears.*

### Pullers Nail—

Cyclops..... 50%
Dudly Improved Nail Puller..... 50%
Miller's Falls, No. 3, per doz. $12.00..... 33⅓&10%
Pearson No. 1, Cyclone Spike Puller, each $30.00..... 50%
Pelican, ₱ doz. $9.00..... 40&10%
Scranton, Case Lots:
No. 2 B (large)..... $5.50
No. 3 B (small)..... $5.00
Smith & Hemenway Co.:
Ajax..... 60%
Diamond B, No. 2, case lots, ₱ doz $6.00
Diamond B, No. 3, case lots, ₱ doz $5.50
Eureka..... 50%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15..... 40%
Yankee..... 66⅔%

### Pulleys—Single Wheel—

| *Inch* | *2* | *2¼* | *3* |
|---|---|---|---|
| *Awning, doz* | *$0.55* | *.85* | *1.15* |

*Hay Fork, Swivel or Solid Eye..... doz., 4 in., $1.15; 5 in., $1.40*

| *Inch* | *2* | *2¼* | *2½* |
|---|---|---|---|
| *Hot House, doz* | *$0.70* | *.90* | *1.25* |
| *Inch* | *1¼* | *1½* | *1¾* | *2* |
| *Screw, doz* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* | *1¼* | *2* | *2¼* | *2½* |
| *Side, doz* | *$0 30* | *.40* | *.55* | *.63* |
| *Inch* | *1½* | *1¾* | *2* | *2½* |
| *Tackle, doz* | *$0.50* | *.42* | *.58* | *1.00* |

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction...60&10%
Electric Light..... 60%
Side, Anti-Friction..... 60&10%

### Sash Pulleys—

*Common Frame; Square or Round End, per doz., 1¾ and 2 in., 16@19c*
*Auger Mortise, no Face Plate, per doz. 1¾ and 2 in..... 16@19c*
*Auger Mortise, with Face Plate, per doz., 1¾ and 2 in..... 18@19c*
Acme..... 1¾ in., 16¢; 2 in., 19¢
Common Sense, 1¾ in... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2 in. ₱ doz 50%
Grand Rapids All Steel Noiseless.... 50%
Ideal..... 70&5%
Niagara..... 1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 16½¢
Star..... 1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

### Pumps—

*Cistern*..... *60@6 0&10%*
*Pitcher Spout*..... *80@80&10%*
*Wood*..... *50@50&10%*

### Pump Leathers—

*Plunger and Lower Valve—Per gro.:*

| *Inch..* | *2* | *2¼* | *2½* | *2¾* |
|---|---|---|---|---|
| | *$2.20* | *2.50* | *2.75* | *3.00* |
| *Inch..* | *3* | *3¼* | *3½* | *3¾* | *4* |
| | *$3.30* | *3.60* | *3.85* | *4.10* | *4.40* |

*Plunger Cup Leathers—Per 100:*

| *Inch* | *2½* | *3* | *3½* | *4* |
|---|---|---|---|---|
| | *$2.75* | *3 85* | *5.00* | *6.00* |

Barnes Dbl. Acting (low list).... 50&10%
Contractors' Rubber Diaphragm No. 2 B. & L. Block Co..... $16.00
Daisy Spray Pump..... ₱ doz. $7.20
Flint & Walling's Fast Mail (low list).55%
Flint & Walling's Pitcher Spout..... 80%
National specialty Mfg. Co., Measuring, $6.00..... 30%
Mechanical Sprayer..... $7.20
Myer's Pumps, low list..... 50%
Myers' Power Pumps..... 50%
Myers' Spray Pumps..... 50%

### Punches—

*Saddlers' or Drive, good..doz. 65@70c*
*Spring, single tube, good quality... $1.75@2.00*
*Revolving (4 tubes)...doz. $3.50@3.75*
Bemis & Call Co.'s Cast Steel Drive.... 50%
Bemis & Call Co.'s Check..... 55%
Benard Spring Belt Punches..... 33⅓%
Lodi Spring Belt Punches..... 50%
Morrill's No. 1 (A.B.C.), ₱ doz., $15.00..50%
No. 2, ₱ doz. $22.50..... 50%
Hercules, each $7.50..... 50%
Niagara Hollow Punches..... 40%
Niagara Solid Punches..... 55&10%
Paragon Spring Belt Punches..... 50%
Steel Screw, B & K. Mfg Co..... 40%
Tinners' Hollow, P., S. & W. Co. 35@35&5%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44..... 60%

### Rail— Barn Door, &c.—

*Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:*

| *⅛* | *⅝* | *¾* | *In.* |
|---|---|---|---|
| *$1.70* | *$2.10* | *$3 00* | *100 feet.* |

*Angular for Sq. Groove Wheels:*

| *Small.* | *Med.* | *Large.* | |
|---|---|---|---|
| *$1.50* | *1.90* | *2.60* | *100 feet.* |

*Sliding Door, Iron Painted..2¼@2¾c*
*Sliding Door, Wrought Brass, 1¼ in..... lb. 36c...30%*
Allith Mfg. Co., No. 1, Reliable Hanger Track, ₱ foot..... 8¢
Allith Mfg. Co., No. 2, Reliable Hanger Track, ₱ foot..... 10¢
Cronk's Double Braced Steel Rail, ₱ foot..... 3½¢
Cronk's O. N. T. Rail..... 3¼¢
Lane's Hinged Track, ₱ 100 ft., 1 in., $3.70; 1¼ in., $4.40
Lanes' O. N. T., ₱ 100 ft., 1 inch, $3.00; 1¼ inch, $3.70; 1½ inch, $4.00.
Lanes' Standard, 1¼ in., ₱ 100 ft ..... 4.00
Lawrence Bros., ₱ ft. 11¢..... 60%
Lawrence Bros. New York..... 3¼¢
McKinney's Hinged Hanger Rail ₱ foot, 11¢..... 50%
McKinney's None Better..... ₱ ft. 3¼¢
McKinney's Standard ..... ₱ ft. 4 ¢
Myers' Stayon Track ..... 50&10%
Safety Door Hanger Co.'s Storm King Safety..... 60%
Safety Door Hanger Co.'s U.S. Standard ..... 60%
Smith's Wrought Bracket, Plain..... 3¼¢
Smith's Special..... 4¼¢
Smith's Never Jump, per ft. 11¢..... 50%
Smith's Plain Steel..... 30%
Smith's Milled Steel..... 4¼¢
Stowell's Cast Rail..... ₱ ft. 13½¢
Stowell's Steel Rail, Plain..... 25%
Stowell's Wrought Bracket, 1 3-16 in.... ₱ ft. 3¢
Stowell's Wrought Bracket, 1¼x5-16.... ₱ ft. 7¢
Swett's Hylo, per ft. 11¢..... 50&10%
Swett's P. L. B. Steel Rail, ₱ 100 ft. $3.00

### Rakes—

*Net Prices, Malleable Rakes:*

| | *10* | *12* | *14* | *16-tooth* |
|---|---|---|---|---|
| *Shank* | *$1.50* | *1.60* | *1.75* | *1.85* |
| *Socket* | *$1.65* | *1.80* | *1.95* | *2.10* |

*Steel, Garden and Gravel, Aug. 1, '99 List*..... 70%
*Weldless Steel*..... 75&5%
*Malleable Iron, Garden*..... 70&10%
*Lawn Rakes, Metal Head, per doz., 20 teeth*..... *$3.25@3.50*
*24 teeth*..... *$3.50@3.75*
Fort Madison Red Head Lawn..... $3 25
Fort Madison Blue Head Lawn..... $2.70
Jackson Lawn, 29 and 30 teeth, ₱ doz., net, $4.25
Kohler's:
Lawn Queen, 20-tooth, ₱ doz..... $3 45
Lawn Queen, 24-tooth, ₱ doz ..... $3.60
Paragon, 20 tooth, ₱ doz..... $2.75
Paragon, 24-tooth, ₱ doz..... $3.00
Steel Garden, 14-tooth, ₱ doz. ..... $2.98
Malleable Garden, 14-tooth, ₱ doz..$3.00

### Rasps, Horse—

Disston's..... 75%
Heller Bros..... 70&5&10&5%
McCaffrey's American Standard..... 60&10&5%
New Nicholson..... 70&10&75%
See also *Files.*

### Razors—

Borasic..... 60 & 10%
Fox Razors, No. 42, .. ₱ doz. $24.00 } 40% dis.
Fox Razors, No. 44, .. ₱ doz, $20.00 }
Fox Razors, No. 82, Platina, ₱ doz. } $25.00

Red Devil..... 60%
Silberstein:
Carbo Magnetic..... $18.00
Griffon, No. 65..... $15.00
Griffon, No. 60..... $12.00
All other Razors..... 40%

#### Safety Razors—

Safety Razors..... 40%
New Gem, in Tin Boxes..... ₱ doz. $12.00
New Gem, Extra Blades ..... ₱ doz. $3.35
Gem Outfits (Razor, Strop, etc.)..... ₱ doz. $5.60
Complete Razor, extra Blade in Leather Case..... ₱ doz. $27.00
Silberseln..... 40%

### Reels— Fishing—

Bishop's Independent Fish Reel Spooler, ₱ doz..... $30.00
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 14, Q 16, A 16, B 16, 4008, Rubber Populo, Nickeled Populo..... 20%
Aluminum, German Silver, Bronze..25%
1240 N, 124 N..... 20%
3004 N, 06 N, 6 RM, G 9..... 25%
4 N, 6 PN, 24 N, 26 PN..... 20%
2904 P..... 33⅓%
2904 PN..... 33⅓%
0924 N..... 33⅓%
02084 N..... 33⅓%
002904 PN..... 33⅓%
802 N..... 33⅓%
986 PN, 2904 N, 974 PN..... 25%
5009 PN, 5009 N..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR..... 20%
304 P, 304 PN, 00304 P, 00304 PN..33⅓%

### Registers—*List July 1, 1903.*

*Black Jap*
*White Jap*
*Bronzed*
*Nickel Plated*
*Electro Plated* } *75@75&10*

### Registers, Cash—

Sun, No. 10, Metal Cabinet..... $30.00
Sun, No. 10, Wood Cabinet..... $25.00

### Revolvers—

*Single Action*..... *85@90c*
*Double Act'n, except 44 cal*..... *$1.90*
*Double Action, 44 caliber*..... *$2.05*
*Automatic*..... *$3.60*
*Hammerless*..... *$4.10*
*Note.—Jobbers frequently cut the above prices of manufacturers for small trade.*

### Riddles, Hardware Grade

*16 in., per doz*..... *$2.25@$2.50*
*17 in., per doz*..... *$2.50@$2.75*
*18 in., per doz*..... *$2.75@$3.00*

### Rings and Ringers—

#### Bull Rings—

| *2* | *2½* | *3 Inch* | |
|---|---|---|---|
| *Steel*..... *$0 70* | *0.75* | *0.80* | *doz.* |
| *Copper*..... *1.00* | *1.15* | *1.40* | *doz.* |

#### Hog Rings and Ringers—

*Hill's Rings....gro. boxes, $4.25@4.50*
*Hill's Ringers, Gray Iron. doz. 50@55c*
*Hill's Ringers, Mal. Iron, doz. 70@75c*
*Blair's Rings.....per gro. $5.00@5.25*
*Blair's Ringers...per doz. 60@60@ .65*
*Brown's Rings....per gro. $5.25@5.50*
*Brown's Ringers..per doz. $0.65@ .70*

### Rivets and Burrs—

*Copper*..... *60@60&5%*
*Iron or Steel*..... *75&5@75&10%*

### Rollers—

Acme, Stowell's Anti-Friction..... 50%
Barn Door, Sargent's list..... 60%
Cronk's Stay..... 66⅔%
Cronk's Brinkerhoff..... 66⅔%
Lane's Stay..... 33⅓&5%
Stowell's Barn Door Stay..... ₱ doz. $1.00

### Rope—

*Manila, 7-16 in. diam. and larger, tarred or untarred*..... *lb. .. @12 c*
*Manila, Hay, Hide and Bale Ropes, Medium and Coarse*..... *lb. .. @12 c*
*Sisal, 7-16 in. diam. and laroer:*
*Mixed*..... *lb. .. @ 8 c*
*Pure*..... *lb. .. @ 9¼c*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Mixed*..... *lb. .. @ 8 c*
*Pure*..... *lb. .. @ 9¼c*
*Sisal, Tarred, Medium Lath Yarn:*
*Mixed*..... *lb. .. @ 7½c*
*Pure*..... *lb. .. @ 8¼c*

*Cotton Rope:* —*Lb.*—
*Best*..... *¼-in. and larger.. 18@25c*
*Medium..¼-in. and larger.. 16@18c*
*Com ....¼-in. and larger..12@13c*

*Jute Rope:*
*Thread No. 1, ¼-in. and up, lb. 6 c*
*Thread No. 2, ¼-in. and up, lb. 5½c*
Old Colony Manila Transmission Rope, ₱ ℔ 17½¢

### Wire Rope—

*Galvanized*..... *47½&5%*
*Plain*..... *55&5%*

### Ropes, Hammocks—

Covert Mfg. Co.:
Jute..... 40&5%
Sisal..... 30%
Covert Saddlery Works..... 60&5%

### Rules—

*Boxwood*..... *60&10@10%*
*Ivory*..... *35@10@35@10&5%*
Chapin-Stephens Co.:
Boxwood..... 60@60&10%
Ivory..... 35@35&10&10%
Miscellaneous..... 50@50&10&10%
Combination..... 55@55&10%
Stationers'..... 10@10&10%
Lufkin's Steel..... 50&10%
Lufkin's Lumber..... 60&10%
Stanley R. & L. Co.:
Boxwood..... 60@60&10%
Ivory..... 35@35&10&10%

Upson Nut Co.:
Boxwood..... 60@60&10%
Ivory..... 35&10@35&10&10%

### Sash Locks—See *Locks, Sash.*

### Sash Weights—

See *Weights, Sash.*

### Sausage Stuffers or Fillers—see *Stuffers or Fillers, Sausage.*

### Saw Frames—See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins:
Circular..... 50%
Band..... 50&10&10%
Cross Cuts..... 35&5%
Mulay, Mill and Drag..... 50%
One-Man Saw..... 40%
Wood Saws..... 40%
Hand, Compass, &c..... 40%
Chapin-Stephens Co.:
Turning Saws and Frames....30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws..... 30&10&5%
Disston's:
Circular, Solid and Inserted Tooth..50%
Band, 3 to 14 in wide..... 50%
Band, ¼ to 2¾..... 50%
Crosscuts..... 45%
Narrow Crosscuts..... 50%
Mulay, Mill and Drag..... 50%
Framed Woodsaws..... 35%
Woodsaw Blades..... 35%
Woodsaw Rods..... 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 79, 77, 5..... 25%
Hand Saws, Nos 7, 107, 107½, 3, 1, 0, 00, Combination..... 30%
Compass, Keyhole, &c..... 25%
Butcher Saws and Blades..... 35%
C. E. Jennings & Co.'s.:
Back Saws..... 35&10%
Butcher Saws..... 30&10%
Compass and Key Hole Saws..35&5&10%
Framed Wood Saws..... 30&10%
Hand Saws..... 20&25&10%
Wood Saw Blades..... 30&10%
Millers Falls:
Butcher Saws..... 15&10%
Star Saw Blades..... 15&10%
Peace & Richardson's Hand Saws..... 30%
Simonds':
Circular Saws..... 50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts..... 40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws..... 50%
Back Saws..... 25&25&7½%
Butcher Saws..... 25&25&7½%
Hand Saws..... 25&25&7½%
Hand Saws, Bay State Brand..... 25%
Compass, Keyhole, &c ..... 25&25&7½%
Wood Saws..... 25@25&7½%
Wheeler, Madden & Clemson Mfg. Co.'s
Cross Cut Saws..... 50%

### Hack Saws—

Atkins' Hack Saw Blades A A A. ... 25%
Disston:
Concave Blades..... 25%
Keystone..... 40%
Hack Saw Frames..... 30%
Pittsburg File Works, The Best..... 25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.... 35&5&10%
Hack Saws, Nos. 173, 180, complete.. 35&5&10%
Goodell's Hack Saw Blades..... 40%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades..... 35&5&10%
Star Hack Saws and Blades..... 15&10%
Sterling Hack Saw Blades..... 35%
Sterling Hack Saw Frames .... 30&10&5%

### Scroll—

Barnes' No. 7, $15..... 25%
Barnes' Scroll Saw Blades..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20..... 20%
Lester, complete, $10.00..... 15&10%
Rogers, complete, $4.00..... 15&10%

### Scalers, Fish—

Bishop's Lightning..... ₱ doz. $3.10
Covert's Saddlery Works ..... 60&10%

### Scales—

*Family, Turnbull's*..... *50@50&10%*
*Counter:*
*Hatch, Platform, ½ oz to 8 lbs. doz $5.50*
*Two Platforms, ½ oz to 8 lbs. doz. $10*
*Union Platform, Plain..$1.70@1.90*
*Union Platform, Striped $1.85@2.15*
Chatillon's:
Eureka..... 25%
Favorite..... 40%
Grocers' Trip Scales..... 50%
Chicago Scale Co.:
The "Little Detective," 25 lbs..... 50%
Union or Family No. 2..... 60%
Portable Platform (reduced list)..... 30%
Wagon or Stock (reduced list)....25@35%
Pelouze Scales—Household, Counter, Candy, Ice, Postal, Computing..... 50%
"The Standard" Portables..... 50%
"The Standard" R. R. and Wagon..... 50%

### Scrapers—

*Box, 1 Handle*..... *doz. $2.00@2.25*
*Box, 2 Handle*..... *doz. $2.60@2.85*
*Ship Light, $2.00; Heavy, $2.50*
Adjustable Box Scraper (S. R. & L. Co) $6.00..... 30@30&10%
Chapin-Stephens Co., Box..... 50@50&10%

### Screens, Window, and Frames—

Flyer Pattern Screens ..60&5@60&5&2½%
Maine Screen Frames ..... 40&10&5%
Perfection Screens..... 50&5@60&5&2½%
Phillips' Screen Frames. 60&5@60&5&2½%
Porter's:
Fairview Screens..... 60&5@60&5&2½%
Hummer Screens..... 60&5@60&5&2½%
Klondike Screens..... 60&5@60&5&2½%
See also *Doors.*

## Screws—Bench and Hand—

*Bench, Iron..doz. 1 in.. $2.50@2.75 : 1½, $3 00@3.25: 1¼, $3.50@3.75*
*Bench, Wood, Beech....doz. 30@30&5*
*Hand, Wood.....30@30&5%*
B. Bliss Mfg. Co., Hand..... 30%
Chapin-Stephens Co., Hand.....30@30&10%
Ohio Tool Co., Bench and Hand.....30%

## Coach, Lag and Hand Rail—

*Lag, Common Point, list Oct. 1, '99.....80&5%*
*Coach and Lag, Gimlet Point, list Oct. 1, '99.....80%*
*Hand Rail, list Jan. 1, '81. 70&10@75%*

## Jack Screws -

*Standard List.....75&10@80&5%*
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50@50&5%
Sargent.....70%

## Machine—

*List Jan. 1, '98.*
*Flat or Round Head, Iron 50@50&10%*
*Flat or Round Head, Brass 50@50&10%*

## Set and Cap—

*Set (Iron or Steel).....78%* } *Extra*
*Sq. Hd. Cap.....70%* } *10&5*
*Hex. Hd. Cap.....70%* } *often*
*Rd. or Fillister Hd. Cap 65%* } *given.*

## Wood—

*List July 23, 1903.*
*Manufacturers' printed discounts :*
*Flat Head, Iron.....87½&10@.. .%*
*Round Head, Iron.....85&10@....%*
*Flat Head, Brass .....85&10@....%*
*Round Head, Brass .....80&10@....%*
*Flat Head, Bronze....77½&10@ ...%*
*Round Head, Bronze.....75&10@...%*
*Drive Screws.....87½&10%*

## Scroll Saws—See Saws, Scroll.

## Scythes— Per doz

*Clipper Pattern, Grass..$4.25@$5.00*
*Full Polished Clipper.....$4.75@$5.50*
*Grain.....$7.00@$7.50*
*Clipper, Grain.....$7.75@$8.25*
*Weed and Bush.....$4.50@$5.00*

## Seeders— Raisin—

Enterprise.....25@30%

## Sets— Awl and Tool—

*Brad Awl and Tool Sets :*
*Wood Hdle., 10 Awls doz. $2.00@2.25*
*Wood Hdle., 1½ Awls, 6 Tools doz. $3.50@3.60*
Aiken's Sets, Awl and Tools :
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H'dls...Nos. 1, $13; 2, $18; 3, $13; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders.....30&10%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior :
No. 1, $7.50 ; No. 2 $4.00; No. 3, $5.50.....30@30&10&10%

## Garden Tool Sets—

Ft. Madison, Three Pieces, Hoe, Rake and Shovel.....₱ doz. sets.....$9.00

## Nail—

*Square.....per gro. $2.25@2.50*
*Round, Blk. and Pol., assorted..... gro. $1.80@2.00*
*Octagon.....gro. $4.50@5.75*
Buck Brothers.....37½%
Carson's Diamond Point, ₱ gr. $13..25%
Mayhew's.....per gro. $9.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro $7.50

## Rivet—

*Regular list.....70&10@75%*

## Saw—

Aiken's:
Genuine.....50&10%
Imitation.....50&10%
Atkin's:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....20%
Spring Hammer.....30%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.63.....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.63.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal, Cross Cut .....₱ doz. $8.50
Royal, Hand.....₱ doz. $5.00
Taintor Positive. .....₱ doz $6.75

## Shaving—

Fox Shaving Sets, No. 30, per doz, $24.00 net

## Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%

## Shaves Spoke—

*Iron.....doz. $1.00@1.15*
*Wood.....doz. $1.75@2.00*
Bailey's (Stanley R. & L. Co.).....30@30&10&10%
Chapin-Stephens Co .....30@30&10&10%
Goodell's, ₱ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

## Shears—

| *Cast Iron...* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best .....* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good.....* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap.... * | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality, Jap.....70@70&10%*
*" Nickel.....60@60&10%*
*Fair qual. Jap.....80@80&5%*
*" Nickel.....75@75&10%*
*Tailors' Shears.....40@40&10%*
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....10%
Wilkinson's Hedge .....1900 list 45%
Wilkinson's Branch, Lawn and Border..... 40%
Wilkinson's Sheep .....1900 list. 50%

## Tinners' Snips—

*Steel Blades .....20&5@20&10*
*Steel Laid Blades.....40&10@50%*
Forged Handles, Steel Blades, Berlin ..... 40@40&10%
Heinisch's Snips .....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 inch .....40&7½&10%
Niagara Snips .....40%
P., S & W. Co. .....20%
Triumph Pipe Shear.....₱ doz. 9.00

## Pruning Shears and Tools—

Cronk's Grape Shears .....33⅓&5%
Cronk's Pruning Shears.....33⅓&5%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00 .....25%
Disston's Pruning Hook, ₱ doz. $12.00 .....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades. ...40@40&5%
Orange Shears.....50&10@50&20%
Grape .....40&10@50%
Tree Pruners.....75%
P., S. & W. Co.....33⅓&5%

## Sheaves—Sliding Door—

Stowell's Anti-Friction .....50%
Patent Roller Hatfield's, Sargent's list. 70&10%
Reading.....50%
R. & E. list.....33⅓&5%
Wrightsville Hatfield Pattern.....50%

## Sliding Shutter—

Reading list.....50%
R. & E. list.....33⅓&5%
Sargent's list.....50&10%

## Shells—Shells, Empty—

Brass Shells, Empty :
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty :
Acme, Ideal, Leader, New Rapid, Magic 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge .....20%
Climax, Union, League, New Rival 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....30&10%

## Shells, Loaded—

*Loaded with Black Powder .....40%*
*Loaded with Smokeless Powder, medium grade.....40&5%*
*Loaded with Smokeless Powder, high grade. .....40&10&10%*
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

## Shoes, Horse, Mule, &c.—

*F. o. b., Pittsburg;*
*Iron.....per keg $3.85*
*Steel.....per keg 3.60*
Burden's, all sizes, ₱ keg.....$3.90

## Shot—

*Drop, up to B, 25-lb. bag.....$1.60*
*Drop, B and larger, per 25-lb. bag $1.85*
*Buck, 25-lb. bag.....$1.85*
*Chilled, 25-lb. bag.....$1.85*

## Shovels and Spades—

*Association List, Nov. 15, 1902....40%*

## Sieves and Sifters—

*Hunter's Imitation, gro. $10.50@11.00*
Buffalo Metallic Glued, S. S. Co., ₱ gr.:

| 14&16 | 16&18 | 18&20 |
|---|---|---|
| $13.20 | $13.50 | $14.40 |

National Mfg. Co.:
Victor.....per gro. $12.00
Surprise.....per gro. $11.00
No Name.....per gro. $11 00
Shaker Barber's Pat.) Flour Sifters, ₱ doz., $2.00.....40%

## Sieves, Tin Rim -

*Per dozen.*

| *Mesh.....* | *1½* | *16* | *18* | *20* |
|---|---|---|---|---|
| *Black, full size ..* | *$1.20* | *1.25* | *.30* | *1.35* |
| *Plated, full size .* | *$1.30* | *1.35* | *1.40* | *1.45* |
| *Black, scant.... .* | *$0.85* | *1.00* | *1.05* | |

## Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested, doz.....$0.90@0.95*
*Mesh 20, Nested, doz..... 1.00@1.05*
*Mesh 24, Nested, doz ..... 1.30@1.40*

## Sinks—

### Cast Iron—

*Standard list.....60@60&10%*
NOTE.—*There is not entire uniformity lists used by jobbers.*

## Skeins, Wagon—

*Cast Iron.....75@75&10%*
*Steel.....40@40&10%*

## Slates, School—

*Factory Shipments.*
*"D" Slates.....40&10%*
*Noiseless Slates.....60&5 tens*

## Slaw Cutters—See Cutters.

## Slicers, Vegetable—

Sterling No, 10, $2.00.....33⅓

## Snaps, Harness—

*German.....40@40&10%*
Covert Mfg. Co.:
Derby.....30&5&2%
High Grade.....45%
Jockey.....30&10%
Trojan.....45%
Yankee.....30&5&2%
Yankee, Roller.....30&5&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
Oneida Community Solid Swivel.....60%
Sargent's Patent Guarded .....66⅔&10%

## Snaths—

*Scythe.....45%*

## Snips, Tinners'—See Shears.

## Spoons and Forks—

### Silver Plated—

*Good Quality..... 50&10@60&5%*
*Cheap..... 40@60&10%*
International Silver Co.
1847 Rogers Bros. and Rogers & Hamilton.....40&10%
Rogers & Bro., William Rogers Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Flat Ware.....60%
No. 17 Silver Plated Ware.....60&10%

### Miscellaneous—

*German Silver.....60@60&5%*
Cartaraugus Cutlery Co.:
Yukon Silver.....50%
Simeon L. & Geo. H. Rogers Co.:
German or Nickel Silver, Special list 1. &10%

### Tinned Iron—

*Teas.....per gro. 45@5.5c*
*Tables..... per gro. 90c@$1.00*

## Springs—Door—

Chicago (Coil).....40&10%
Gem (Coil).....20%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....₱ doz. $1.10
Victor (Coil).....50&10&10%

## Carriage, Wagon, &c.

*1¼ in. and Wider :*
*Black or ⅛ Bright, lb.....4¾@5 c*
*Bright, lb. .....5¼@5½c*
*Painted Seat Springs :*
*1½ x 2 x 26 . per pr.....50@55c*
*1½ x 2 x 28 per pr.. .....60@65c*
*1½ x 3 x 28 and narrower, per pr. 80@85c*

## Sprinklers, Lawn—

Enterprise.....25@20%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

## Squares—

*Nickel plated.... } List Jan. 5, 1900.*
*Steel and Iron... } 70&10@70&10&10%*
*Rosewood Hdl Try Square and T-Bevels .....60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%*
Disston's Try Sq. and T-Bevels.....70%
Winterbottom's Try and Miter..... 40&10@40&10&10%

## Squeezers— Lemon—

*Wood, Common, gro., No. 0, $5.25 @$5.50 : No. 1, $6.25@$6.50.*
*Wood, Porcelain Lined.*
*Cheap .....doz. $1.00*
*Good Grade.....doz. $1.25*
*Tinned Iron.....doz. $0.75@1.25*
*Iron, Porcelain Lined.....doz. $1.75*

## Staples—

*Barbed Blind. .....lb. 6@6½c*
*Electricians', Association list..... 80&10&10&10%*
*Fence Staples, Plain $2.25; Galvanized .....$2.55*
*Poultry Netting, Staples....per lb.. 3¼@3½c*
Grand Crossing Tack Co.'s list....80&10%

## Steels, Butchers'—

Dick's.....30%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%

## Steelyards..... .....30@30&10%

## Stocks and Dies—

*Blacksmiths'.....50@50&10%*
Curtis Reversible Ratchet Die Stock..25%
Derby Screw Plates.....25%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%

## Stone—

### Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $3.00 per gro., 12 inch, $10.80
Norton Emery Scythe Stones :
Less than gross lots.....₱ gro. $9.00
One gross or more.....₱ gro. $7.20
Lots of 10 gross or more....₱ gro $6.00
Pike Mfg. Co. 1901 list:
Black Diamond S. S....₱ gro. $12.00
Lamoille S. S .....₱ gro. $11.00
White Mountain S. S....₱ gro. $9.00
Green Mountain S. S....₱ gro. $6.00
Extra Indian Pond S. S.₱ gro. $7.50
No. 1 Indian Pond S. S..₱ gro. $7.00
No. 2 Indian Pond S. S..₱ gro. $4.50
Leader Red End S. S....₱ gro $4.50
Balance of 1901 list 33⅓% } 40%

### Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.....50%
Gem Corundum Axe, Single or Double Grit.....55%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones.....50%
Pike Mfg. Co. 1901 list: ₱ lb.
Arkansas Stone, No. 1, 3 to 5¼ in. $2.80
Arkansas Stone, No. 1, 5¼ to 8 in. $3.50
Arkansas Slips No. 1 .....$4.00
Lily White Washita 4 to 8 i .....60¢
Rosy Red Washita, 4 to 8 in .....60¢
Washita Stone, Extra, 4 to 8 in..50¢
Washita Stone, No. 1, 4 to 8 in..40¢
Washita Stone, No. 2, 4 to 8 in..30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
India Oil Stones (entire list) ..... 33⅓% } 80&5%

Hindostan No. 1, Regular.....₱ D 8¢
Hindostan No. 1 Small.....₱ D 10¢
Axe Stones (all kinds) .....₱ D 80¢
Turkey Oil Stones, ex. 5 tos in. ₱ D 80¢
Queer Creek Stones, 4 to 8in.....20¢
Queer Creek Slips.....40¢
Sand Stone.....5¢ } 40%
Belgian, German and Swaty Razor Hones.....50%
Natural Grit Carving Knife Hones, ₱ doz.....$3.00
Quick Edge Pocket Knife Hones, ₱ doz.....$3.00
Mounted Kitchen Sand Stone, ₱ doz.....$1.50 } 40%

## Stoners— Cherry—

Enterprise.....25@30%

## Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%
Whipple's Combination.....₱ doz. $2 50

## Door—

Chapin-Stephens Co.....60@60&10%

## Plane—

Chapin-Stephens Co.....20%

## Straps— Box—

Cary's Universal, case lots. ...20&10&10%

## Hame—

Covert's Saddlery Works.....60&10%

## Stretchers, Carpet—

*Cast Iron, Steel Points...doz. 55@60c*
*Socket.....doz. $1.75*
Excelsior Stretcher and Tack Hammer Combined, per doz. $6.... .....20%

## Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, 1902.....30&5%

## Sweepers, Carpet—

National Sweeper Co.: Per doz.
Auditorium, Roller Bearing (26 in case), Nickel..... .....$54.00
Mammoth, Roller Bearing (30 in case), Nickel..... .....$60.00
Marion, Roller Bearing, regular finishes, full Nickel.....$24.00
Marion Queen, Roller Bearing, full Nickel. .....$24.00
Monarch, Roller Bearing, Nickel..$22.00
Monarch, Roller Bearing, Jap'ned.$20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel.....$36.00
Monarch Extra, Roller Bearing, (17-inch case), Nickel.....$36.00
Monarch Extra, Roller Bearing (17-inch case), Japanned.....$33.00
National Queen, Fancy Veneers...$27.00
Perpetual, Regular Bearings, Nkl.$20.00
Perpetual, Regular Bearings, Jap.$18.00
NOTE.—*Rebates: 30c per dozen on three-dozen lots ; $1 per dozen on five-dozen lots ; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.*

## Tacks, Brads, &c.—

*List Jan. 15, '99.*
*Carpet Tacks..... .....90¢&40¢10@....%*
*American Cut Tacks ....90¢25@....%*
*Swedes Iron Tacks. 90¢&30¢10¢&5@....%*
*Swedes Upholsterers' Tacks..... 90¢&5&10¢&5@....%*
*Gimp Tacks.....90¢&5¢10@....%*
*Lace Tacks.. .....90¢&5¢10@....%*
*Trimmers' Tacks. .90¢30¢10¢5@....%*
*Looking Glass Tacks. 70¢10¢5@....%*
*Bill Posters' and Railroad Tacks... 90¢&5¢@10....%*
*Hungarian Nails ....80¢30¢5@....%*
*Common and Patent Brads..... 80¢10¢5@....%*
*Trunk and Clout Nails..80¢10@....%*
NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

## Miscellaneous—

*Double Pointed Tacks. 90 & 6 tens & 5%*
Steel Wire Brads, R. & E. Mfg. Co.'s list,.. 50&10@60%
See also *Nails, Wire.*

## Tanks, Oil—

| | Each. |
|---|---|
| Emerald, S. S. & Co.....30-gal | $3.25 |
| Emerald, S. S. & Co.....60-gal. | $4.00 |
| Queen City S. S. & Co., 30-gal. | $3.65 |
| Queen City S. S. & Co., 60-gal. | $4.50 |

## Tapes, Measuring—

*American Asses' Skin.....40¢10@50%*
*Patent Leather.....25@30&5%*
*Steel..... .....40@40¢10%*
*Chesterman's.....25@25&5%*
*Eddy Asses' Skin.....40&10@50%*
Eddy Patent Leather.....25@30&5%
Eddy Steel .....40@40&10%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899..... .....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic..... ..30@30&5%

## Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger .per 100 lbs. .$3.00*

## Thermometers—

*Tin Case.....80¢10@80¢10¢5%*

## Ties, Bale—Steel Wire.

*Single Loop..... .....80¢2½%*
*Monitor, Cross Head, Etc.....70%*

## Brick Ties—

Niagara Brick Ties.....30&10%

## Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

## Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

## Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

## Tire Benders, Upsetters, &c.—

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—
L. & I. J. White ..... 20@20&5%

### Hay—
Myers' Hay Tools ..... 50%
Stowell's Hay Carriers ..... 5%
Stowell's Hay Forks ..... 50%
Stowell's Fork Pulleys ..... 5%

### Saw—
Atkins' Cross Cut Saw Tools ..... 40%
Simonds' Improved ..... 33⅓%
Simonds' Crescent ..... 25%

### Ship—
L. & I. J. White ..... 25%

### Transom Lifters—
See *Lifters, Transom.*

### Traps—Fly—
*Balloon, Globe or Acme ..... doz. $1.15@1.25; gro. $11.50@12.00*
*Harper, Champion or Paragon ..... doz. $1.25@1.40; gro. $13.00@13.50*

### Game—
*Oneida Pattern ..... 75c10@75c10c5%*
Newnouse ..... 45&45&5%
Hawley & Norton ..... 65&65&5%
Victor (Oneida Pattern) ..... 75&75&5%
O.C. Jump (Blake Pattern) 60&5@60&10%

### Mouse and Rat—
*Mouse, Wood, Choker, doz. holes ..... 8½@9c*
*Mouse, Round or Square Wire ..... doz. 85@90c*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½ ..... ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00
No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00 ..... 50%
J. M. Mast Mfg. Co.: Per gro.

| | Mouse. | Rat. |
|---|---|---|
| Blizzard ..... | No. 12, $3.00 | No. 1, $9 50 |
| Old Nick ..... | No. 30, 2.22 | No. 2, 8.40 |
| Joker ..... | No. 5, 2.10 | No. 3, 5.40 |

Imp'd Snap Shot, Mouse, per gro., 2 hole, $2 40.
Imp'd Snap Shot, Mouse, per gro., 4 hole, $4.20.

### Trimmers. Spoke—
Bonney's Nos. 1 and 2 ..... 33⅓%
Wood's K 1 ..... 50%

### Trowels—
Disston Brick and Pointing ..... 30%
Disston Plastering ..... 25%
Disston "Standard Brand" and Garden Trowels ..... 35%
Kohler's Steel Garden Trowels, 5 in. ..... ₱ gro. $5.00
Kohler's Steel Garden Trowels, 6 in. ..... ₱ gro. $6.00
Never-Break Steel Garden Trowels ..... gro. $6.00
Rose Brick and Plastering ..... 25&5%
Woodrough & McParlin, Plastering .. 25%

### Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern ..... 50&10%
Western Pattern ..... 60&10%
Handy Trucks ..... per doz. $16.80
Grocery ..... per doz. $15.00
Daisy Stove Trucks, Improved pattern ..... ₱ doz. $18.50
Model Stove Trucks ..... ₱ doz. $18.50

### Tubs, Wash—

| | No. 1 | 2 | 3 |
|---|---|---|---|
| *Galvanized, per doz.* | *$5.00* | *5.50* | *6.25* |
| Galvanized Wash Tubs (S. S. & Co.): No. | 1 | 2 | 3 |
| Per doz., net | $5.70 | 6.50 | 7.20 |

| | | | |
|---|---|---|---|
| 10 | 20 | 30 | |
| 6.30 | 7 20 | 8.10 | |

### Twine—Miscellaneous—

| *Flax Twine—* | *BC* | *B.* |
|---|---|---|
| *No. 9, ¼ and ½-lb. Balls* | *..23c@24c* | |
| *No. 12, ¼ and ½ lb. balls* | *..18c@20c* | |
| *No. 18, ¼ and ½-lb. Balls* | *..16c@18c* | |
| *No. 24, ¼ and ½-lb. Balls* | *..16c@18c* | |
| *No. 36, ¼ and ½-lb. Balls* | *..15c@17c* | |

*Chalk Line, Cotton, ½-lb Balls ..... 30c*
*Cotton Mops, 6, 9, 12 and 15 lb. to doz ..... 10@12c*
*Cotton Wrapping 5 Balls to lb ... according to quality ..... 16c@25c*
*American 2-Ply Hemp, ¼ and ½-lb. Balls ..... 13@14c*
*American 3 Ply Hemp, 1-lb. Balls .. 13@14c*
*India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) ..... 9c*
*India 3-Ply Hemp, 1-lb. Balls ..... 9c*
*India 3-Ply Hemp, 1½-lb. Balls .. 8c*
*2, 3-4 and 5-Ply Jute, ½-lb. Balls... 9@10c*
*Mason Line, Linen, ½-lb. Balls .. 16c*
*No. 264 Mattress, ¼ and ½-lb Balls. 37c*
*Wool, 3 to 6 ply ..... 5¾@6c*

## Vises—
*Solid Box ..... 50&10@60%*

### Parallel—
Athol Machine Co:
Simpson's Adjustable ..... 40%
Standard ..... 40%
Amateur ..... 25%
Bonney's ..... 33⅓%
Columbian Hdw. Co ..... 40%
Emmert Universal:
Pattern Makers' No. 1 ..... $15.00
Pattern Makers' No 2 ..... $12.50
Machinist and Tool Makers' No. 4. $12.50
Fisher & Norris Double Screw .... 15&10%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co ..... 20@30%
Merrill's ..... 20%
Miller's Falls ..... 60&10%
Massey Vise Co.:
Clincher ..... 40%
Perfect ..... 20%
Lightning Grip ..... 30%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Sargent's ..... 40%
Smith & Hemenway Co.:
Machinists ..... 40%
Jewelers ..... 33⅓%
Snediker's X. L ..... 33⅓%
Stephens' ..... 33⅓%

### Saw Filers'—
Bonney's, No. 1, $13; No. 3, $16 .... 40%
Disston's D-8 Clamp and Guide, ₱ doz $30 ..... 25%
Perfection Saw Clamps, ₱ doz. ..... $8 00
Reading ..... 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 45&50%

### Wood Workers'—
Massey Vise Co.:
Lightning Grip ..... 15%
Perfect ..... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—
Bignall & Keeler Combination Pipe Vise ..... 60%
Hollands' Combination Pipe .... 60@60&5%
Massey's Quick Action Pipe ..... 40%
Parker's Combination Pipe:
87 Series ..... 60%
187 Series ..... 60&5%
No. 870 ..... 40%

## Wads—Price Per M.

| | |
|---|---|
| *B. E., 11 up* | *.60c* |
| *B. E., 9 and 10* | *.70c* |
| *B. E., 8* | *.80c* |
| *B. E., 7* | *.80c* |
| *P. E., 11 up* | *$1.00* |
| *P. E., 9 and 10* | *1.25* |
| *P. E., 8* | *1.50* |
| *P. E., 7* | *1.50* |
| *Ely's B. E., 11 and larger* | *$1.70@1.75* |
| *Ely's P. E., 12 to 20* | *$3 00@3.25* |

Dis 15%

### Ware, Hollow—Cast Iron, Hollow—
*Stove Hollow Ware:*
*Enameled ..... 55c10@60%*
*Ground ..... 60c10@65%*
*Plain or Unground ..... 65c10@70%*
*Country Holloware per 100 lbs., $2.50*
*White Enameled Ware:*
*Maslin Kettles ..... 70%*
*Covered Ware:*
*Tinned and Turned ..... 40%*
*Enameled ..... 50%*
See also *Pots Glue.*

### Enameled—
Agate Nickel Steel Ware .... 50&20
Agate Nickel Steel Ware, Specials .... 60&15%
Iron Clad Ware ..... 70&10%
Lava, Enameled ..... 40&10%
Never Break Enameled ..... 50%

### Tea Kettles—
*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *.45c* | *50c* | *55c* | *65c* |

### Steel Hollow Ware.
Avery Spiders & Griddles .... 65@65&5%
Avery Kettles ..... 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles ..... 65&5%
Never Break Kettles ..... 60%
Solid Steel Spiders & Griddles. .... 65&5%
Solid Steel Kettles ..... 60%

### Warmers, Foot—
Pike Mfg. Co., Soapstone .... 40@40&10%

### Washboards—
Solid Zinc ..... ₱ doz
Crescent, family size, bent frame. $3.00
Red Star, family size, stationary protector ..... $3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector ..... $2.65
Cable Cross, family size, stationary protector ..... $2.90
Single Zinc Surface:
Naiad, familysize, open back perforated ..... $2.40
Saginaw Globe, protector, family size, ventilated back ..... $2.25
Brass Surface:
Brass King, Single Surface, open back ..... $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface ..... $3.00

### Washers—Leather, Axle—
*Solid ..... 80c10@80c10c10%*
*Patent ..... 90@90c5%*
*Coil:*

| *¾* | *1* | *1¼* | *1¼* | *Inch.* |
|---|---|---|---|---|
| *11c* | *13c* | *18c* | *14c* | *per box* |

### Iron or Steel—

| *Size bolt ....* | *5-16* | *⅜* | *½* | *⅝* | *¾* |
|---|---|---|---|---|---|
| *Washers ....* | *$5.10* | *4.50* | *2.90* | *2.70* | *2.50* |

*In lots less than one keg add ½c per lb., 5-lb. boxes add ½c to list.*

### Cast Washers—
*Over ½ inch, barrel lots, per lb 13¼@2c*

### Waterers, Hog—
Improved Dewey, ₱ doz ..... $13.00

### Wedges—
*Oil Finish ..... lb. 2.35@2.40c*

### Weights—

### Hitching—
Covert Mfg. Co ..... 40&2%
Covert's Saddlery Works ..... 60&10%

### Sash—
*Per ton, f.o.b. factory:*
*Eastern District ..... $23.00*
*Western, Central and Southern Districts market unsettled, prices ranging from $19.00@20.00*

### Wheels, Well—
*8-in., $1.6 @1.80; 10-in., $2.00@2.25; 12-in., $2.50@2.65; 14-in., $4.00@4.25*

### Wire and Wire Goods—
*Bright and Annealed:*
*6 to 9 ..... 75@75&10%*
*10 to 18 ..... 75c5@75c10c5%*
*19 to 26 ..... 75c10c10@80c5%*
*27 to 36 ..... 75c10c7½@80c2½%*
*Galvanized:*
*6 to 9 ..... 70c5@70c10%*
*10 to 18 ..... 70c5@70c10%*
*19 to 26 ..... 72½@72½c5%*
*27 to 36 ..... 70@70c5%*
*Coppered:*
*6 to 9 ..... 70c5@70c10%*
*10 to 18 ..... 70c10@70c10c5%*
*19 to 26 ..... 72½c10@72½c5%*
*27 to 36 ..... 70@70c5%*
*Tinned:*
*6 to 14 ..... 72½c10@72½c5%*
*15 to 18 ..... 70c10@70c10c5%*
*19 to 26 ..... 65c10c10@70c5%*
*27 to 36 ..... 60@60c10%*
*Annealed, Steel and Tinned, on Spools ..... 70@70c10%*
*Brass & Copper on Spools 60@60c10%*
*Brass, list Feb. 26, '96 ..... 30%*
*Copper, list Feb. 26, '96 ..... 15%*
*Cast Steel Wire ..... 50%*
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

### Bright Wire Goods—
*List June 24, 1903. 90c10@90c10c10%*

### Wire Cloth and Netting—
*Galvanized Wire Netting ..... 80c10@80c10c5%*
*Painted Screen Cloth, per 100 ft. $1.25*
*Standard Galv. Hardware Grade:*
*Nos. 2, 2½ and 3 Mesh, sq. ft. ..... 3c*
*Nos. 4 and 5 Mesh, sq. ft. ..... 3½c*
*No. 6 Mesh, sq ft ..... 3½c*
*No. 8 Mesh, sq ft ..... 4c*

### Wire Barb—See *Trade Report.*

### Wrenches—
*Agricultural ..... 80c5@80c10%*
*Baxter Pat'rn S Wrenches ..... 70c5@70c10%*
*Drop Forged S ..... 45@45c5%*
Acme ..... 60&10%
Alligator ..... 70%
Alligator Pattern ..... 70%
Bull Dog ..... 70%
Bemis & Call's:
Adjustable S ..... 35&5%
Adjustable S Pipe ..... 40%
Brigg's Pattern ..... 30&10%
Combination Black ..... 40&5%
Combination Bright ..... 40%
Merrick's Pattern ..... 50%
No. 3 Pipe, Bright ..... 55%
Boardman's ..... 33⅓%
Coes' Genuine Knife Hdl. ..... 40&10&5%
Coes' Genuine Steel Hdl. ..... 40&10&5%
Coes' Genuine Key Model ..... 40&10&5%
Coes' "Mechanics' ..... 40&10&10&5%
Donohue's Engineer ..... 40&10%
Dudly Combination ..... 50&10&5%
Dudly Pipe ..... 50&10&5%
Dudly Adjustable Pipe ..... 40&10&5%
Eagle ..... 50&10%
Elgin Wrenches ..... 40%
Elgin Monkey Wrench Pipe Jaws .. 33⅓%
Gem Pocket ..... 30%
Hercules ..... 70%
W. & B. Machinist:
Case lots ..... 50&5%
Less than case lots ..... 50%
Improved Pipe (W & B.) ..... 60%
Solid Handles, P.S. & W ..... 50&50&5%
Stillson ..... 65%
Triumph ..... 60&10%
Vulcan Chain ..... 50%

### Fruit Jar—
T & B Fruit Jar Wrenches ..... ₱ gro $9.00
Triumph Fruit Can Wrenches. ₱ gro $9.60
Triumph Fruit Jar Holders ₱ gro. $15.00

### Wrought Goods—
*Staples, Hooks, &c., list March 17 '92 ..... 90@90c5%*

### Yokes Neck—
Covert Saddlery Works, Trimmed .... 70%
Covert Saddlery Works, Neck Yoke Centers ..... 70%

### Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters' .. list net

### Zinc—
*Sheet ..... per 100 lbs. $6 45@6.70*

# PAINTS, OILS AND COLORS.

### White Lead, Zinc, &c.
Lead, English white, in Oil. ... 9½@ 9¼
Lead, American White, in Oil:
Lots of 500 ℔ or over ..... @ 6½
Lots less than 500 ℔ ..... @ 7
In Barrels ..... @ 6
Lead, White, in oil, 25 ℔ tin pails, add to keg price ..... @ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price ..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price. .. @ 1½
Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice; for lots of less than 500 lbs. net.
Lead White, Dry in bbls. ..... @ 6
Zinc, American, dry ..... ₱ ℔ 4½@ 4¾
Zinc, Paris, Red Seal, dry ..... @ 8½
Zinc, Paris, Green Seal, dry ..... @ 9½
Zinc, Antwerp Red Seal, dry .. @ 6¾
Zinc, Antwerp, Green seal, dry .. @ 8¼
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over ..... 12 @12¼
Lots of less than 1 ton ..... 12¼@12½
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over ..... 10¾@11¼
Lots of less than 1 ton ..... 11@11¼
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 1 bbl. lots of one or assorted grades, 15; 25 bbls., 2%; 50 bbls., 4%.

### Dry Colors.
Black, Carbon ..... ₱ ℔ 5 @10
Black, Drop, Amer ..... 4 @ 6
Black, Drop, Eng ..... 5 @15
Black, Ivory ..... 16 @20
Lamp, Com ..... 4½@ 6
Blue, Celestial ..... ₱ ℔ 4 @ 6
Blue, Chinese ..... 29 @32
Blue, Prussian ..... 27 @30
Blue, Ultramarine ..... 4½@15
Brown, Spanish ..... ½@ 1
Carmine, No. 40 ..... ₱ ℔ $3.75@4.00
Green, Chrome, ordinary ..... 3½@ 6
Green, Chrome, pure ..... 17 @25
Lead, Red, bbls. ⅓ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6½
Lots less than 500 ℔ ..... @ 7
Litharge, bbls. ⅓ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6½
Lots less than 500 ℔ ..... @ 7
Ocher, American ..... ₱ ton $8.50@16.00
Orcher, American Golden ..... 2½ @ 3
Orcher, French ..... 1¾ @ 2¼
Orcher, Foreign Golden ..... 3 @ 4
Orange Mineral, English ..... ₱ ℔ 9 @11
Orange Mineral, French ..... 10¾@11¼
Orange Mineral, German ..... 6¾@ 9
Orange Mineral, American ..... 8 @ 8½
Red, Indian, English ..... 4½@ 8½
Red, Indian, American ..... 3 @ 3½
Red, Turkey, English ..... 4 @ 6
Red, Tuscan, English ..... 7 @10
Red, Venetian, Amer., ₱ 100 ℔ .$0.50@1.50
Red Venetian, English, ₱ 100 ℔ .1.35@1 75
Sienna, Italian, Burnt and Powdered ..... ₱ ℔ 3 @ 6½
Sienna, Ital., Raw, Powd ..... 3 @ 6½
Sienna, American, Raw ..... 1½@ 2
Sienna, American, Burnt and Powdered ..... ₱ ℔ 1½@ 2
Talc, French ..... ₱ ℔ 1 @ 1½
Talc, American ..... 75 @1.25
Terra Alba, French, ₱ 100 ℔ . 95 @1.00
Terra Alba, English ..... 95 @1.00
Terra Alba, American No. 1 .... 75 @85
Terra Alba, American No. 2 .... 50 @60
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer ..... 1½@ 2
Umber, Raw, Amer ..... 1½@ 2
Yellow, Chrome ..... 11 @14
Vermilion, American Lead ..... 10 @25
Vermilion, Quicksilver, bulk ... @70
Vermilion, Quicksilver, bags ... @71
Vermilion, English, Import ... .80 @85
Vermilion, Chinese ..... $0.90@1.00

### Colors in Oil.
Black, Lamphlack ..... 12 @14
Blue, Chinese ..... 36 @46
Blue, Prussian ..... 32 @36
Blue, Ultramarine ..... 13 @16
Brown, Vandyke ..... 11 @14
Green, Chrome ..... 10 @15
Green, Paris ..... @24
Sienna, Raw ..... 12 @15
Sienna, Burnt ..... 12 @15
Umber, Raw ..... 11 @14
Umber, Burnt ..... 11 @14

### Miscellaneous.
Barytes, White Foreign, ₱ ton $17.50@20.00
Barytes Amer. floated ..... 18.50@20.00
Barytes, Crude, No. 1 ..... 10.00@11.00
Chalk, in bulk ..... ₱ ton 3.00@ 3.25
Chalk, in bbls ..... ₱ 100 ℔ @ 35
China Clay, English ..... ₱ ton 11.00@17.00
Cobalt, Oxide ..... ₱ 100 ℔ 2.50@ ...
Whiting, Common. ₱ 100 ℔ .45@ .48
Whiting, Gilders ..... .55@ .57
Whiting, extra Gilders' .... .58@ .60

### Putty.
In bladders ..... 1¾@2¼
In bulk ..... 1½@2
In cans 1 ℔ to 5 ℔ ..... 2½@4¼
In cans 12½ ℔ to 25 ℔ ..... 1½@2¼

### Spirits Turpentine.
In Oil bbls ..... 58½@59
In machine bbls ..... 59 @59½

### Glue.
Cabinet ..... ₱ ℔ 11 @15
Common Bone ..... 6 @ 8
Extra White ..... 18 @24
Foot Stock, White ..... 11 @14
Foot Stock, Brown ..... 7 @10
German Hides ..... 12 @18
French ..... 10 @40
Irish ..... 13 @16
Low Grade ..... 8 @11
Medium White ..... 14 @17

### Gum Shellac—
| | Cts. per lb. | |
|---|---|---|
| Bleached, Commercial | 45 | @.. |
| Button | 50 | @60 |
| Diamond I | 60 | @.. |
| Fine Orange | 53 | @57 |
| A. C. Garnet | 47 | @48 |
| D. C | 95 | @.. |
| T. N | 51 | @53 |
| V. S. O | 63 | @65 |

### Animal, Fish and Vegetable Oils.
Linseed, City, raw ..... ₱ gal. 42 @43
Linseed, City, boiled ..... 44 @45
Linseed, State and West'n, raw 39 @40
Linseed, raw Calcutta seed ..... @65
Lard, Prime Winter ..... 57 @58
Lard, Extra No. 1 ..... 50 @52
Lard, No. 2 ..... 37 @40
Cotton-seed, Crude, f.o.b mills. 23 @24
Cotton-seed, Summer Yellow, prime ..... 29½@31
Cotton-seed Summer Yellow, off grades ..... 29 @30
Sperm, Crude ..... @55
Sperm, Natural Spring ..... 60 @62
Sperm, Bleached Spring ..... 62 @63
Sperm, Natural Winter ..... 63 @65
Sperm, Bleached Winter ..... 65 @67
Tallow, Prime ..... 48 @49
Whale, Crude ..... @..
Whale, Natural Winter ..... 46 @47
Whale Bleached Winter ..... 48 @49
Menhaden, Brown, Strained .. 31 @32
Menhaden, Light Strained .... 32 @33
Menhaden, Bleached Winter .. 34 @35
Menhaden, Ex Bleached Winter 36 @37
Cocoanut, Ceylon ..... 6 @ 6¼
Cocoanut, Cochin ..... @ 7¾
Cod, Domestic ..... 39 @40
Cod, Newfoundland ..... 40 @41
Red Elaine ..... 44 @45
Red Saponified ..... ₱ gal. 4 @ 4¼
Olive, Italian, bbls ..... 51 @ 53
Neatsfoot prime ..... 54 @ ..
Palm, prime, Lagos ..... ₱ ℔ 5¾@ 6¾

### Mineral Oils.
Black, 20 gravity, 25@30 cold test ..... ₱ gal. 13 @14
Black, 29 gravity, 15 cold test. 14 @15
Black, Summer ..... 13 @14
Cylinder, light filtered ..... 20½@21½
Cylinder, dark filtered ..... 18½@19½
Paraffine, 903-907 gravity ..... 15 @15½
Paraffine, 903 gravity ..... 14 @14½
Paraffine, 885 gravity ..... 11½@12½
Paraffine, red ..... 14 @15½
In small lots ½¢ advance.